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ABSTRACT

Three considerations form the basis of an ecological theory of teaching: activity structures, student participation styles, and social cognitive development. To explore this theory scholars met in seminars, each bringing the concepts and perspectives of his discipline or area of inquiry. This report contains a synthesis of responses from twelve seminar members. They address the topics of classroom behaviors and participation, social dynamics within the classroom, activity structures and teacher-pupil interactions, and observation and testing of the ecological theory in classroom situations. (JD)

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Ecological Theory of Teaching

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Ecological Theory of Teaching

CONCEPTUAL DIMENSIONS,
OUTCOMES SPECIFICATIONS,
AND IMPLICATIONS FOR TEACHERS
OF AN ECOLOGICAL THEORY OF TEACHING

A Compendium of Papers by Members
of the Seminar of Scholars

Report ETT-79-4

William J. Tikunoff
Director, Programs on Schooling

**Far West Laboratory for
Educational Research and Development**

1855 FOLSOM STREET • SAN FRANCISCO, CALIFORNIA 94103

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PREFACE

This is one of a series of reports by the Far West Laboratory for Educational Research and Development concerned with developing ecological perspectives of teaching. Under funding by the National Institute of Education, the project has been underway since December 1977 and is projected to continue contingent upon funding from NIE.

Overall long-range goals of the project are four. An initial goal is the development of a conventional theory of teaching that approaches and views classroom teaching and learning from ecological perspectives. Such perspectives build from knowledge about teaching/learning in the teacher-student learning group as a sociological as well as a psychological process. An underlying assumption is that, previously, only psychological perspectives have served to inform instructional theory and the training of teachers. Thus, both educational psychology as well as disciplines outside it are being utilized such that a holistic, multi-disciplinary approach is being used.

Attendant to theory construction and growing out of efforts to pilot test initial constructs and interrelationships is the development of appropriate research methodologies, the second long-range goal. As part of this process, both qualitative and quantitative methodologies are being developed and/or adapted from scholars' works in other fields. Those selected, which provide a "fit" with the phenomena being examined, will have to be piloted.

A third goal is the development and implementation of strategies--both in-service and preservice--which can be used to train teachers and others to utilize the ecological perspectives. Such strategies are perceived as being more sociological in nature than those previously employed. In addition, it is quite

likely that not only teachers but all those involved interacting with teacher and student learning groups--students, principals, other adults, etc.--will need to be reoriented to this perspective.

Finally, as a fourth goal, a restructuring experiment in nature is proposed in order to test the conventional theories in operation. Exactly how the experiment will be designed and conducted is the focus for emergent efforts growing from both the development of methodologies and identification of theoretical constructs and (re)training strategies.

To guide project development and inform constructs that serve as analytic components of the ecological perspectives, a Seminar of Scholars has been organized. Representing such fields of inquiry as sociology, cognitive anthropology, human ethology, environmental social psychology, communications theory, human ecology, and educational psychology, the Seminar continues meeting twice yearly. Expertise of Scholars is utilized by developing original papers, participating in bridging activities with one or two others which center on a particular problem, reacting and responding to syntheses of Scholars' work, and collaborating with FWL staff on specific inquiry foci. As examples of the latter, five in-depth literature reviews and annotated bibliographies have been completed by graduate students of several of the Scholars with their guidance--one each for cognitive anthropology and sociolinguistics, environmental social psychology, human ecology, human ethology, and sociology. To complement the information and insights presented within the literature reviews, two secondary analyses of extant, naturalistic data also have been conducted.

This collection of papers is by members of the Seminar of Scholars. As the Introduction will explain, they were commissioned in response to the Seminar's identification of major issues attendant to theory development and application in a restructuring experiment in nature, the end goal of the program.

To begin exploring these issues, Scholars were asked to respond to specific questions posed for them by the FWL staff. These papers represent a first step toward what is hoped will be a continuing dialogue around the three issues presented and described in the Introduction.

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INTRODUCTION

At its meeting in San Francisco In November 1978, the Seminar of Scholars for the Ecological Theory of Teaching program met to review ongoing work and to deliberate issues which have resulted. The report of that meeting appears as Report ETT-79-3. Two recommendations grew out of their deliberations. The first was that FWL staff should engage in a series of mini-inquiries to pilot simultaneous data collection and analysis strategies in relation to three ecological perspectives: activity structures, student participation styles, and social cognitive development. The second was to continue exploring three major issues related to the development of the theory and its operationalization in the proposed restructuring experiment. These center on elaboration of conceptual dimensions under consideration as ecological perspectives, specification of what constitutes outcomes for an ecological theory of teaching, and implications of such a theory for use by teachers and, therefore, for teacher training.

As an initial foray into dialogue surrounding these three issues, members of the Seminar agreed to address key questions in relation to one or more of the issues, particularly in light of their own work and interests. This paper is a synthesis of responses received from twelve members of the Seminar to questions posed by FWL staff. Included are papers by Phyllis Blumenfeld, University of Michigan; Hugh Mehan, University of California, San Diego; Ray Rist, College of Human Ecology, Cornell University; Steven Hamilton, College of Human Ecology, Cornell University; Bernard McKenna, Instruction/Professional Development, National Education Association; Reyes Ramos, Urban Studies Center, University of Texas at Arlington; Ronald Lally, Far West Laboratory and Syracuse University; Franklin Becker, College of Human Ecology, Cornell University;

Steven Rossert, University of Michigan; Carolyn Evertson, R&D Center for Teacher Education, University of Texas, Austin; Donald Blakeslee, Carbon County School District One, Rawlins, Wyoming; and Ann Lieberman, Teachers College, Columbia University.

Seven members' papers were concerned with conceptual dimensions. The differences in approach reflected the varied backgrounds of the participants. Blumenfeld's focus is on the tasks that children perform in the classroom, because it is here that teachers and children interact. She suggests tasks may be analyzed in terms of their content, format, the specific skills and models of thinking they demand, the general skills required, and the participation structures they engender. Participation structure here refers to the mode in which information is communicated and in which responses are given. Blumenfeld speculates on how tasks, participation structures and activity structures might interact to influence both learning and social relationships, and suggests this as a focus of inquiry for eco-theorists.

Mehan discusses the concept of participation structures. He reviews the work of Phillips, who was one of the first to apply this notion to classroom research, and of others who have extended this work. His own studies have examined the interactional sequences of the instructional phases of lessons, and found that their boundaries are marked by shifts in kinesic, paralinguistic, and verbal behavior. Competent participation in the classroom involves awareness of these configurations and leads to what he calls "interactional competence", involving both a "communicative" and an "interpretive" dimension. As students are evaluated both on academic knowledge and interactional competence, Mehan implies that these "patterns of participation" are central to an understanding of classroom behavior.

Rist is concerned with the role the social setting plays in determining the definitions that participants bring to a situation, in this case the classroom. These definitions will change as participants interact with each other, depending on the communicative events in which they share. Here, Rist refers to the kinds of notions Mehan talks about under his "patterns of participation". Similarly, the social setting influences instruction as norms develop for which skills are to be mastered and in how much time, how students are ranked and graded, and the development of prestige. Rist emphasizes that an ecological perspective necessitates a concern with social organization, social structure, and patterns by which social understandings are created and sustained.

Hamilton argues that an ecological perspective must not be reductionist. He echoes the beliefs of others in an emphasis on looking at the "patterns of mutual interaction among many forces." He stresses that the frame for the ecologist is the "entire context." "Pattern" and "flow" are more appropriate terms in an ecological framework than "dependent" and "independent" variables.

McKenna restricts his comments to methodological issues. He stresses the importance of carefully training "ecologist-ethnographers" for the performance of classroom analysis from an ecological perspective. This analysis, he states, should include both observation and evaluation, for "unevaluated teaching and learning acts are not worthy of pursuit."

Ramos is similarly concerned with a methodological issue. He maintains that "the unexpected event" can function as a methodological component of an ecological theory of teaching. He describes, with an example, what he means by an unexpected event, showing that it can be either social (produced by people) or physical (natural causes), fortunate or unfortunate, and can be studied at an interpersonal or at an organizational level. The study of such events can

be used as a research strategy for looking at the ways in which the larger environment influences what goes on within classrooms.

Lally's approach to the problem is to draw an analogy between teaching theory and the preschool child. From a Piagetian point of view, he sees teaching theory at a developmental stage similar to the preschooler. He advocates a transition from viewing states to viewing transformations, from centration (restriction of fixed viewpont) to decentration, and from egocentrism to egocentrism (being able to take the child's point of view). Teaching theory must be able to view the relationship among elements (equilibrium), and account for the effects of elements outside the system. Ethnographic methodology may be best for this task.

Three members' papers considered the nature of outcomes in an ecological theory of teaching. Becker's response deals with educational outcomes. Having defined "outcome" as "any observable datum one chooses to select...to focus on," he then discusses the problem of selecting outcomes from such a broad spectrum. Selection is partly a function of values and partly dependent upon the developmental stage of the child. A second problem concerns the possibility of predicting variables which will result in a desired outcome. He discusses the danger of basing predictions on objective characteristics alone. To avoid this, Becker suggests abandoning attempts to identify causal relationships in favor of alerting participants to a wide range of actors which operate in the classroom setting, and then to observe the operation of these factors. This he characterizes as a management (dynamic) rather than a planning (static) approach. Thus, classroom research should identify relevant variables for consideration in assessing behavior rather than describe linkages among all variables. In a given situation, "bounded predictability" is possible, leading to predictions for a classroom, or a school.

Bossert considers the consequences of activity structures in the classroom. At the general level, the temporal ordering of activity structures should be considered, not only in terms of time-on-task, but also with regard to mastery of skills and pacing and sequencing of tasks. Activity structures may affect teachers' assessments of pupils, depending on how much the teacher is participating or observing the task. In some activities conduct is as important as achievement, and this may affect evaluation. In others, comparative assessments are impossible. Activity structures also may affect the distribution of instructional assistance. Sometimes the brighter students will finish a common task early and be given extra assignments, whereas on other occasions the slower students may receive more help. Teacher authority and teacher-pupil interaction is a related issue, which depends on personal contact by the teacher, encouraged by some activities but impossible in others. Interpersonal assessments within the group also are linked to activity structures, and friendships formed according to academic standing or not depending on the degree of individualization of tasks. The learning of cooperative or competitive norms also is a function of classroom activity structures.

Evertson argues that effort should be directed towards a search for short-term outcomes which have practical validity in the classroom. She suggests three ways of examining short-term outcomes that exist in previous research. First, teaching behaviors may be viewed as treatments which result in student effects, similar to Skinnerian stimulus and response, with each move akin to behavioral "shaping." The problem for researchers is to determine that the meaning of a given interaction is the same for each participant. A second method is suggested by Weinstein's study on classroom centers. Information was collected, centers rearranged, and changes in activity patterns measured for consistency with teachers' goals. For the third possibility, Evertson

suggests the IR&DT methods of Far West Lab, and her own research, where the development of outcomes is based on a specific research question.

Two members' papers addressed the implication of ecological theory for use by classroom teachers. Blakeslee's concern is with how a teacher "armed with an ecological theory" might perceive the tasks of teaching. He concludes that such a teacher would be able to grasp better the wholeness of the teaching-learning phenomenon in the classroom. Thus, not only would he/she integrate content and social learning goals and curriculum, but a student's needs and attention to these would be considered wholely. In looking at current preparation programs for teachers, he finds lacking course work geared to enable teachers to understand and accommodate group behavior, group and organizational communication, and conflict resolution, and advocates including these along with current teacher preparation coursework. In addition, group counseling skills and a general understanding of sociology are seen to be important.

Lieberman's notions build from the "bottom up," beginning with a discussion of the traditional role and surrounds of a classroom teacher. Focusing on a teacher's major dilemma--a relationship built on teaching as well as being friends of students--she discusses issues surrounding this sometimes-delimiting relationship. Among these are rewards for students, seeming discrepancies between demands of goals and objectives and the tasks of teaching, and demands of the school environment. Finally, she cites an ecological theory of teaching as providing hope for teachers, and suggests questions that it will help answer.

Papers appear in the order in which they are discussed above. One additional point should be noted. Because of constraints on their own time, two of the Scholars are completing their papers over the summer of 1979. These will appear as an addendum to this report.

AN INITIAL MODEL OF TASK FORM, CONTENT, AND PROCESS

Phillis Blumenfeld
University of Michigan

This is an expansion of the initial model of form, content and process about which you asked. A graduate student, Kathy Wessels, and I met several times to clarify what was originally a vague idea and tried, as you requested, to outline various possible relationships. The premise is that teachers and children interact around tasks to be accomplished--the main work of the classroom. Therefore, types of tasks, what they entail and how they are presented serve as the focal point for study.

Below are some definitions of the terms. Following these are ideas on how tasks, participation structure and activity structure influence both learning and social interaction.

We assume that all tasks contain content, format, and require certain learning skills and knowledge to complete. These skills are sometimes specific to the task and can also transcend it. Different thought processes are also intrinsic to the nature of the work. The tasks are delivered via various participation structures and in the context of different activity structures.

1. Content: topic of subject matter of the task, such as math, reading.

2. Format: the mode of response needed to complete the assignment. Response modes include: copying from the board, underlining, filling in a blank, crossing out, matching, reciting, drawing, coloring, and other forms of art work.

3. Task specific skills: knowledge of the content necessary to complete the task. These might be math facts like addition and subtraction or word decoding skills, or understanding of concepts and principles of a discipline.

4. Modes of thinking: the level of thought required to complete the task. These levels are similar to Bloom's taxonomy and Gagne's hierarchy. Recognition, recall, synthesis, analysis or evaluation are the primary thought modes. The modes typically used in the classroom should be considered in terms of their match with the types of thought processes tapped on achievement tests.

5. General learning skills: processes which supersede particular tasks that children must master in order to find out what is to be done, carry it out, and complete the assignment correctly. Included in this category are attending, following directions, listening, taking notes, planning, observing, taking turns, cooperating.

The content of a task may serve as a vehicle to promote process. Show-and-tell can foster listening skills, taking turns and oral communication in the early grades. Later, teachers may lecture in an effort to teach children to glean important points and to organize these into notes. Thus, lessons often are designed to provide instruction in learning skills--copying from the board, outlining, observing and recording data, gathering information from a dictionary, a map, an atlas. Here the content is less important than practice in the particular process being stressed. Participation structure (delivery system): the mode in which information is communicated and in which responses are given; includes discussion, lecture, independent library, laboratory or occasionally community work, recitation, as well as the omnipresent individual seatwork. How might these factors combine in a typical assignment? Here are some examples. Picture first graders engaged in a task where the content is math. The specific skill required is simple addition. The mode of thinking is recall. The response mode is circling and then using a color key to determine what color to make each feather in a portion of a Thanksgiving turkey. (2+2=?, then Circle 4; r is coded red; color the feather red). The participation structure for this task is individual seatwork.

In contrast, the content of a social studies lesson is Indian life. Here, the goal is to teach specific facts about housing and livelihood. The teacher

reads to the class from a book; the delivery is via lecture and the general learning skill needed is listening. The level of thought required for answering questions like "What were the names of the houses the Indians built?" is factual recall. As the children are questioned, the response mode is recitation--requiring hand raising and oral presentation. Clearly, the two lessons entail different interaction patterns, the use of different learning as well as social skills, and the ability to use diverse response modes.

Points to Consider

1. Activity structure will determine how the work group is organized but not necessarily what the work is. In fact, certain work may necessitate different types of organizations to be successfully executed. For example, Aronson et al. (1978) and Johnson and Johnson (1976), among others, have been experimenting with games which promote cooperation and require communication among children to solve problems. They aim to increase interaction and participation. This task obviously cannot be accomplished effectively in a classroom where recitation is the primary mode--or where little time is devoted to cooperative efforts. The effect of the new task which requires cooperation, taking turns, information gathering and planning will be obviated by an activity structure that does not facilitate interaction and a participation structure that primarily promotes listening, reciting and individual seatwork. By virtue of its definition, multi-task rooms cannot contain a great deal of recitation. They need to have tasks that allow for different groupings, participation structures, and response formats.

2. The most salient features to focus on (foreground) seem to be participation structure and response format. In some cases, participation structure will predetermine format--as in lecture, where listening and note taking are

the primary learning skills needed. Alternatively, individual seatwork may require copying from the board with little talking or interaction involved.

3. At the early grades, general learning skills may be the primary focus of academic work; participation structure may allow differing opportunity to practice these skills. For example, recitation allows students opportunity to practice listening and taking turns. The mode of response likely to be promoted is reciting and hand raising. Seatwork requires following directions and writing and gives practice in response formats like matching, underlining, coloring. Almost all general learning skills may come into play when doing seatwork, except for those which are social in nature such as taking turns, sharing information, cooperating. As compared to discussion, recitation would probably promote an individualistic orientation; the class is a group of isolated respondents who talk when called on. In discussion, listening to others, synthesizing what they have said and formulating an appropriate response, rather than reciting a simple right answer, is necessary. Here the class or discussion group can be viewed as a functional unit rather than as a group of isolated individuals.

4. Content delimits both participation structure and response format to a great extent, at least as the curriculum is currently constructed. For instance, math is likely to be done using independent seatwork; discussion is probably at a minimum. Note taking may be necessary and knowledge of specific facts is essential. The response format is typically filling in a blank or sometimes showing computation. Social studies probably require more discussion, writing, and artwork.

5. The general learning skills likely to be promoted by each content area are somewhat different, at least as those content areas are typically taught. Math requires following directions and problem solving; social studies may

require information gathering (as for a report on Indians). It's not surprising that social innovations are focused on this content area. As taught, it seems to allow the most leeway for experimentation with differing formats.

6. If the teacher switches from work which is usually done in recitation to tasks which require cooperative planning, gathering of data and report writing, the children may be totally confused and overwhelmed--because they are not as familiar with the new participation mode, may not have the general learning skills to carry out the task, or have limited experience with the response format. This certainly is a problem at the college level. Students who are used to taking short answer tests, when faced with the need to do group projects or term papers, generally get pretty upset. Not because they can't learn the content--but because they lack the other necessary skills. Or, those used to lecture courses are often at a loss in discussion sections or seminars.

7. It seems possible to examine how organization of subject matter may promote the same amount of achievement in terms of content but also give children practice in a variety of other skills. A study of how particular reading programs influence children's interactions around reading, their ability in creative expression or storytelling, as well as the accuracy of their response to workbook questions, would provide useful information for teachers on the effects of curriculum type on student learning and on the development of social norms and attitudes toward subject matter content. For instance, if reading is conducted using groups engaged in texts and workbooks without journal writing, then children may learn to read equally well, but in the former case they are also likely to be able to commit thoughts to paper and may value their own ideas more. One classroom I observed used children's journals and reading materials. Each child read another's story, then had to draw a picture to illustrate it as well as write of an experience he/she had that was similar.

I would venture to guess that in this situation, children might increase in role-taking skills, the value they place on others' work, as well as in their ability to communicate with others. Obviously, they also would be learning something about sharing in a more intrinsic manner than is the case in the more widely used show-and-tell situation. It's likely, also, that involvement might differ with the two types of reading programs. It would be interesting to examine "on task" behavior as combinations of content, format, and participation structure vary.

8. Moreover, how the tasks are designed and carried out should influence children's perceptions of their own and others' abilities. Clearly, when information is public, as in the recitation format, it's easy to tell who did well and who did not. On the other hand, when work is individual (and primarily revolves around seatwork kits like the SRA) then the issue of determining how one is doing as compared to others becomes which color someone is on, who finished what, etc. The participation structure and response format may be individual, but it always has a hidden social component. Even contracts, which often are the mainstay of "open" classrooms, can still mainly involve seatwork. They are individualized--but not necessarily promotive of social skills or other investigatory competencies like observation, sharing. And again, if the tasks assigned are generally similar, but the amount and level differ, the children are all learning the same participation and process skills. They differ only in terms of their progress on learning content specific skills.

The whole problem of the interaction between task, participation structure, and activity structure is an intriguing one. I hope you can provide some answers. I agree that this approach is one teachers could relate to well--their training is usually heavily focused on curriculum. By working from the task up, you might really get them interested in how the work they assign the children

affects more than just content specific learning.

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PARTICIPATION STRUCTURES

Hugh Mehan
University of California, San Diego

The Origins of the Concept of Participation Strucuturc

The concept of participation[1] structures has its origins in sociolinguistic theory, especially the work of Hymes, and in the dialog between sociolinguists and linguists (as exemplified by Chomsky). An understanding of the concept of participation structures is enhanced by an understanding of the difference between "linguistic competence" and "communicative competence."

Chomsky (1964) characterized linguistic competence as the skills and abilities that a speaker must have in order to produce and understand sentences that are grammatically, phonologically, and semantically correct. He proposed a generative model of linguistic skills in which a small, finite number of rules was responsible for the production of a large, infinite number of well-formed sentences.

Hymes (1974) and other sociolinguists (e.g., Ervin-Tripp, 1972; Gumperz, 1971; Labov, et al., 1967), while tacitly accepting Chomsky's generative metaphor, have challenged grammatically based conceptions of competence for being too narrow. Linguistic competence as defined by Chomsky accounts for the production of the possible sentences in a language, but does not account for the occasions upon which these sentences are used. An actual speaker-hearer of a language equipped with only the knowledge of language provided by Chomsky's

1. Phillips originally coined the phrase "participant" structures. Erickson uses the expression "participation structures" because it more accurately conveys the interactional aspects of classroom behavior. This distinction in usage will become clear as the paper unfolds.

theory would be a social incompetent. That person might be observed uttering sentences continually and in a random order. That person would not know when to speak, when not to speak, what to say and when to say it.

Effective communication involves the production of socially appropriate speech, which includes, but is not limited to, the production of grammatically correct sentences. Therefore, sociolinguists maintain that a theory of language (and therefore of competence) must account for the use of language in social context, and not be limited to the production of well-formed sentences.

Sociolinguists have broadened the conception of competence so that the "formal" aspects of language (the knowledge of phonology, syntax, and semantics involved in the production of well-formed sentences) are encompassed by the "functional" aspects of language (see especially Shuy and Griffin, 1978 on this point). The functional aspects of langage concern effective language use in different social situations. It includes the speaker-hearer's ability to communicate ideas and interpret intentions, knowledge of the functions that language can serve, knowledge of the strategies of language that can be used to carry out each function, and knowledge of the constraints that social situations impose on repertoire selection.

Hymes has coined the term "communicative competence" to refer to the capacity to acquire and use language appropriately in different social situations. It is recommended as a more encompassing and productive formulation of a person's knowledge of language than Chomsky's formulation of formal linguistic competence.

There have been a number of studies influenced by Hymes' conception of competence. The collections by Gumperz and Hymes (1964, 1974), Bauman and Sherzer (1974), Sanches and Blount (1975) are particularly important. These studies have produced descriptions of people's ways of speaking in different

social situations in contrasting cultural contexts. They have examined patterns of speaking in a particular group or institution within a given society. In examining the social organization of such acts of speech as greetings, ritual insults, narratives, commands, jokes, chants, these researchers have demonstrated that an intimate relationship exists between language forms, the functions they serve in discourse, and the social contexts in which language forms appear.

Participation Structures in the Classroom Context

Goodenough (1974) phrased the question of membership in a society as: "What do people need to know in order to operate in a manner that is acceptable to others in a society?" A number of researchers have begun to ask: "What do teachers and students (especially students) need to know in order to operate effectively in classroom contexts?"

Competent participation in the classroom community obviously involves academic considerations. To be successful in the classroom, students must indeed master academic subject matter, i.e., learn to read, write, compute, and the content of such subjects as history, social studies, and science.

Research conducted on the social organization of classroom instruction is showing that competent participation in the classroom community involves matters of interactional form as well as academic content. In addition to accumulating a stock of academic knowledge, students must learn that there are appropriate ways to cast their academic knowledge. Learning that certain ways of talking and acting are appropriate on some occasions and not others, learning when, and where, and with whom certain kinds of behavior can occur are some of the essential constitutents of the stock of social knowledge relevant for effective participation in the classroom community.

Phillips (1972) was one of the first researchers influenced by sociolinguistics to employ the concept of "participant structures" in research on the classroom. She compared the speech performance and academic performance of Indian students with native teachers and Anglo teachers in different classrooms.

She reiterated a position previously established by many observers of the classroom scene, i.e, that an immediate concern of teachers is to teach the basic rules of classroom behavior. One such rule of behavior concerns the important role distinction between teacher and student. In most classroom arrangements, the teacher controls the activity, from choices about academic matters to schedules for bathroom breaks. Included within that span of authority, Phillips says, is the regulation of who can talk, when they can talk, and how they can talk.

"Within the basic framework of teacher-controlled interaction, there are several possible variations in structural arrangements of interaction" for communicating different types of educational material, and for providing variation in the presentation of the same material to hold students' interests (Phillips [1972:377]). These "variations in structural arrangements for interaction" are what Phillips calls "participant structures." She described four such arrangments:

1. Teacher interacting with all students

   This participant structure takes two forms. Either the teacher addresses a single student, or all students who are in each other's presence. Students may respond individually or in a chorus, again, in the presence of others. While participation may be voluntary or mandatory, it is always the teacher who determines whether she talks to one, many or all students, receives responses individually or in chorus, and voluntarily or without choice.

2. Teacher interacts with small groups

   This participant structure varies from the first in terms of the number of students involved and their spatial arrangements in the classroom. A small number of students, in most U.S. classrooms, probably an ability

group or reading group, work with the teacher, while the remainder work on their own. Like the first participant structure, it is the teacher who distributes rights to participation.

3. All students work independently

Here, instead of the teacher directly controlling behavior, she serves more as a resource for students who work on their own. In this participant structure, students indicate that they want to communicate with the teacher by raising hands or approaching the teacher's desk. It is important to note the role of the teacher in the direction of the activity. While students work independently, the activities they pursue are dictated by the teacher. While work on the teacher assigned task is voluntary under this arrangement, students can choose or not choose to communicate with the teacher during the assignment.

4. Students are divided into self-directed groups

This participant structure is rare in U.S. classrooms. Such group projects usually have a chairman, Phillips says, that is appointed by the teacher, and who assumes the teacher's veil of authority.[2] In sum, the ways in which talk is regulated in the classroom can be distinguished by a number of features: (a) the numbers of students addressed by the teacher (individualy, small group, whole group), (b) the options for response by the students (individually or in chorus), (c) the degree of freedom in responding (mandatory or voluntary). Again, it is important to remember, that it is always the teacher who determines who is talked to, who talks, whether reponses are obtained individually or in chorus, voluntarily or without choice.

Phillips employed this conception to consider the often made observation that Indian children are silent in classrooms, and perform poorly in school. She analyzed patterns of communication in the community and compared them to patterns of communication in the classroom. This contrast revealed a disparity in participant structures. Interaction outside the classroom was organized in such a way that the individual was not singled out from the group unnecessarily. Each individual could participate voluntarily. This conversational arrangement seems to be a reflection of a more pervasive cultural pattern of

2. Mehan (1977), Cazden, et al. (1978), and Corrasco, et al. (1978) have analyzed a set of "instruction chains" with this topic in mind. In the classroom studied, the teacher presented a set of instructions about an activity to a student, who, in turn, instructed his or her regular work group on that activity. These authors describe the procedures used by the students to accomplish the learning task, many of which are revealing portrayals of the teacher role.

cooperation and collaboration. According to Phillips and other ethnographers of Indian communities, high value is placed on cooperative endeavors, while individualism is devalued. This pattern of communication is undercut by the Anglo-oriented classroom in which participation is organized to emphasize the individual; is mandatory, not voluntary; and individual, not group effort is rewarded.

There need not always be a disjuncture between the organization of participation in and out of the classroom. The long-standing response of U.S. schools to problems such as these has been to "change the child" in order to fit the demands of the classroom. There have been many vocal statements of the opposite sort in the past years, many under the rubric of multicultural or bilingual education. While making the school and home continuous rather than discontinuous is a goal, it is too simplistic to think that making the classroom a carbon copy of the home can resolve the problem.

There is a third way--designing learning environments so as to activate children's energies, competencies and preferences, while reaching school goals. The Kamehameha Early Education Project (Jordan, et al., 1977; Gallimore, et al., 1978) provides a powerful example of how this strategy can work. Native Hawaiians are notorious for their poor school performance. Yet the Kamehameha project was able to raise reading scores from the 19th to 67th percentile in four years. This group did so by emphasizing comprehension rather than phonics and by capitalizing on a unique speech event that occurs naturally in native Hawaiian cultures. The "talking story" is a jointly produced narrative. Instead of a single person telling a story, as is common in U.S. speech communities, native Hawaiians contribute bits and pieces of a story as it unfolds.

The teachers of native Hawaiian children who showed the rapid improvement in reading incorporated this speech event into their classroom routines. A

lesson might concern alligators. The teacher might start the lesson by asking the native Hawaiians to contribute information about what they knew about alligators. The context for this telling resembled the talking story--any and all who wanted to contribute; those who didn't want to contribute were not compelled to do so. After a suitable interval, the teacher introduced a reading lesson in which alligators were prominent. The students read this story to themselves. This sustained silent reading approach contrasts sharply with the conventional "reading circle" in which each student takes turns and mistakes and successes are public (McDermott, 1976). After the stories were read, another round of discussion took place. This time, the teacher guided the discussion to incorporate comprehension of the story as well as real world knowledge. This combination of reading technique and use of a native speech event seems to account for the improvement of the native Hawaiians' academic success.

Participant Structures and Activity Structures

Bossert's (1977) conception of "activity structures" is very similar to Phillips' notion of participant structures. Like Phillips, Bossert distinguishes distinctive patterns of classroom instructional organization. He says that the organization of instructional activities can be described in terms of the size of the work group, the number of different tasks being completed at the same time (the division of labor), the amount of student choice in organizing the tasks, and the extent to which evaluations of task performance are public and comparable.

Bossert uses these dimensions to characterize recitation, class tasks, and multi-task forms of classroom organization. Bossert's description of recitation is illustrative of the similarities between his conception and that of

Phillips. Recitation involves the whole class or a large group of children in a single task. The children listen to the teacher, raise their hands when a question is asked, wait to be recognized, and give an answer. Children can ask questions when they do not understand the material, though the teacher generally controls the flow of questions and answers. During recitation, a child's performance is very public. When the response is correct, the teacher usually praises the child, and when the response is incorrect, the teacher either corrects it or asks the same question of another pupil. Since the task and the content are the same, the pupils' performances can be compared easily, according to Bossert.

Thus, both observers of the classroom scene employ the configuration of students and response opportunities for students as dimensions in their analysis. "Students' options" are also a category influencing both conceptions, but Bossert includes the model of evaluation in his conception in a way that Phillips does not.

While Bossert and Phillips come to similar descriptions of some of the organizational features of classroom instruction, they approach this issue from different theoretical perspectives. Phillips' perspective is sociolinguistic. Her overarching concern is with the organization of talking activities, and the ways in which these are influenced by and influence contexts for talking. The school and the community are arenas in which these concerns are made manifest. Bossert's approach is distinctively sociological. While Phillips is concerned with describing the structure of communication, and is tangentially concerned with the structure of the school and its influence on students' performance, Bossert is primarily concerned with describing the structure of the school, notably its curriculum and its effects on students' performance. That is, Bossert seems more interested in describing the organization of schooling as a

theoretical end in itself, not as a means to another theoretical objective.

Extentions of the Participant Structure Notion

Phillips (1972) equates participant structures with forms of teacher address to students and the forms that students' responses to teachers can take. This concept has been extended, indeed renamed, by Erickson and his group of researchers.[3] Like Phillips, Erickson and his group have been influenced by Hymes' conceptions of communicative competence. Based on extensive observations in a number of classrooms in different communities, he agrees that acceptable speaking requires not only the ability to produce utterances that are grammatically appropriate, but are situationally appropriate as well. In addition, Erickson says the production of appropriate social behavior from moment to moment requires knowing what context one is in, as well as knowing what behavior is considered appropriate in each of these contexts.

Interpreting Contexts

Erickson and Shultz (1975) remind us that contexts are not only given in the physical surrounding, e.g., classrooms, kitchens, churches, but they are also given by the people present, in varying combinations of participants and audience. As McDermott (1976) has cogently put it: contexts are constituted by what people are doing, as well as when and where they are doing it. That is, people in interaction serve as environments for each other. And ultimately, social contexts consist of mutually ratified and constructed environments. These interactionally constituted environments are embedded in time and change from moment to moment.

3. Notably Don Dore-Bremme (now at UCLA), Susan Florio (now at Michigan State) and Jeff Shultz (now at Cincinnati)

For Erickson and his group, "participation structures" are "coherent configurations of concerted action." These configurations include but are not limited to ways of speaking. Erickson, like that other astute observer of the classroom scene, Ray McDermott, is concerned to integrate the nonverbal, kinesic, and situational aspects of interaction into our theoretical frameworks for looking at classrooms. He has paid particular attention to the ways in which participants integrate appropriate behavior with social contexts by interpreting environments.

Different contexts, e.g., a funeral parlor, a gym, a church, each demand appropriate behavior, while the specific content of that behavior varies from situation to situation. Erickson and Shultz (1975) demonstrate this point succinctly with the following example:

> (Scene: Wedding in apartment living room. The couple being married and the priest stand facing each other. Witnesses and friends stand in concentric semi-circles behind the couple. A child of six months lies on the sofa in the opposite corner of the room. The priest speaks the last line in the wedding ceremony.)
>
> Priest: In the Name of the Father, and of the Son, and of the Holy Spirit.
>
> People: Amen.
>
> Child: (Happily, in the moment before anyone moves): Aaah!

Erickson and Shultz say that the six-month-old child waited until a change in context had occurred before making his vocalization. They say that he may have perceived the change in context as cues by the silence followed by the collective "Amen" in response to the priest's verbal closing formula, or he may have attended to the alternation from single to multiple speakers. Whatever part of the constellation of closing cues he attended to (of the ritual and choosing the moment following the "Amen" to make his vocalization) suggests that he may have been attending to the contexts and to the junctures between them which indicated that something new was happening.

The preceding example involves a shift between major events. Events which demand differing behavior may not only be juxtaposed, but differing participation structures can alternate within a single occasion--within phases of classroom events, for example.

The Segmentation of Classroom Events into Phases

Bremme and Erickson (1976) have analyzed the procedural meetings ("circles on the rug") in a K-1 classroom that took place across an academic year. They found that these events were organized into distinct phases. These included the call to the circle, warm-up, students' time, teacher's time and wrap-up. The shift to students' time was announced by those at the edge of the circle rising to their knees and facing into the center, by the commencement of a long, student-speaking turn dealing with a personal experience or conern, and by the teacher's ceasing to scan the group with her face and eyes and focusing instead on one student (speaker). Teacher's time was marked by students' rearranging themselves into a sitting position, turning their faces and eyes toward the teacher and by the commencement of the teacher's scannings as she initiated a topic of discourse dealing with organizational or "teaching" content. Transition times were signaled by the breaking up of either of these verbal-nonverbal patterns, i.e., by the individualization of students' gaze orientation, body positions, and conversational topics--along with increased body movement by both teacher and students.

In a related study, Florio (1978) found that "work time" in the K-1 classroom was composed of three constituent parts which participants referred to as "getting ready," "focused time," and "wind up." Work time as an event was set off from the flow of ongoing classroom activity by the assembly of participants in a single part of the classroom. Activities within this focused event were also marked posturally and spatially. During "focused time," the teacher

and students were oriented in toward the center of activity. Their focus was on the task before them. The teacher excluded children from peer-peer conversation by verbal means (e.g., "I just don't want to hear you now") while not maintaining eye contact with students. This centered focus of orientation contrasts with both "getting ready" and "wind up." At these times, participants adopted a more decentralized focus. Florio reports that the task at hand was not a central focus during these phases, but was more of a sidelight.

Mehan (1979) found that nine "whole group" lessons taught throughout the year in an ethnically mixed (Black and Mexican-American) cross-age (1st, 2nd and 3rd grades) classroom had a similar hierarchical organization to which lesson participants were oriented. Each of these nine lessons was arranged into "opening," "instructional," and "closing" phases. Each phase was characterized by distinctive interactional work between participants.

In the "opening" phase, participants assembled at particular and recurrent places in the room, thereby, in effect, informing each other that they were to participate in a lesson. For example, the teacher shifted from a sitting position in a small group of students to a standing position in front of the chalkboard. At the same time, students put books and other materials away and faced the teacher. This behavior at the kinesic level was recapitulated at the verbal level. The teacher provided verbal <u>directives</u> (procedural instructions to the students to move chairs, sharpen pencils, take out or put away books, etc.), and informatives (verbal formulations which inform the students about what is going to happen in the lesson) (cf. Sinclair and Coulthard, 1975). After adjustments to physical arrangements have been made, the teacher and students focus attention on each other. This change from relatively active to relatively calm kinesic activity marks the shift from the "opening" to the "instructional" phase of the lesson. The closing phase is a mirror image of

the opening phase. While at the outset of a lesson, participants inform each other of what they have done. A set of directives, instructing students to move to the next event in the school day often accompanies closing informatives.

In an exceedingly fine-grained analysis, McDermott, [(1976) and McDermott, et al. (1978)] has located the constituent components that teacher and students in first-grade reading groups employ to hold each other accountable to the on-going course of interaction. The "top" reading group was organized into three "rounds" of interaction (roughly analagous to "phases"). The first round was a quick discussion and organization period in which the teacher told the children to open their reading books and call on volunteers to start to read. The second round was a long session in which each child in the group had the opportunity to read once. In the third group, the teacher asked the children questions, and the children answered in chorus; then, the students left the reading table and prepared for lunch. These rounds were marked off from each other and surrounding classroom activity in a number of ways. Bodies were oriented and "props" were used differently in each round. In the first round, the students handled the books while looking at the teacher. In the second round, the children all focused on the books; in the third round, the books were ignored, while all attended to the teacher. Students shifted their bodies at the end of a speaker's turn toward the teacher or toward the next person to read. In addition, each round was marked by different procedures for sequencing activites. In the first round, students vied for turns, in the second they were nominated by the teacher, and in the third they responded in a chorus.

Although McDermott is able to demonstrate effectively that there is an equivalent social order in the "bottom" group, that reading lesson is organized somewhat differently. At the level of the lesson the groups are basically alike; but the bottom group has four rounds instead of three. This reading

group starts with the teacher at the chalkboard, inviting children to underline words. Then the teacher passes out books. "Taking turns to read" is the third round to appear and it takes up one-third of the time. In the fourth round, children write words from the board on their work papers. As in the top group, each round is marked by different bodily orientations, use of props, and procedures for sequencing activities.

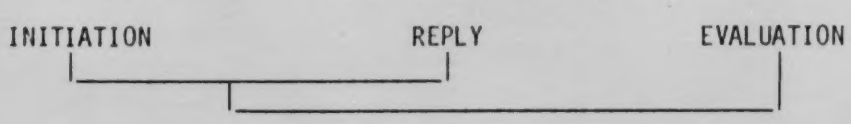
The Segmentation of Phases into Interactional Sequences

The phases of classroom events, in turn, have constituent parts composed of the interactional work of teachers with students. I will illustrate the segmentation of event phases into "interactional sequences" by reference to my own work on the organization of the "instructional phase" of classroom lessons.

The instructional phase is the heart of the lessons. It is here that the bulk of academic information is exchanged between teachers and students. The instructional phase, like the opening and closing phase, is composed of characteristic interactional sequences. This exchange of academic information occurs in interactional units called "elicitation sequences." These units are "interactional" in that they are a joint production of teacher and students; they are "sequential" in that they occur one after the other in interaction. These sequences have three interconnected parts: an Initiation Act, a Reply Act, and an Evaluation Act.

In effect, the three-part Initiation-Reply-Evaluation sequence contains two coupled "adjacency pairs" (Sacks, Schegloff and Jefferson, 1974). The tying structures in these sequences are schematically represented in Figure 1.

Figure 1. The Three-part Instructional Sequence



The Initiation-Reply is the first adjacency pair. When completed, this pair itself becomes the first part of the second adjacency pair. The second part of the second pair is the Evaluation Act, which comments on the completion of the Initiation-Reply pair.

Interactional sequences during the instructional phase of the lesson are organized around topics. The "instructional topic" is established in a "basic sequence" that appears on every occasion of teacher-student interaction. On some occasions, the discussion of the topic ceases with the completion of this basic sequence. On other occasions, teachers and students expand upon the basic topic with a series of "conditional sequences," progressing through these topically related sets of sequences in a systematic fashion.

Summary

Teachers and students mark the boundaries of interactional sequences, event phases, and school events through shifts in kinesic, paralinguistic, and verbal behavior. The presence of these boundary markers in the interaction indicates that participants are oriented toward the organization of school events, and demonstrates that teacher-student interactions--like mother-infant, cousellor-student, and psychiatrist-patient interactions--are rhythmic, cooperative activities, involving the complex coordination of speech and gesture.

Interaction is segmented, and to some extent controlled, by systematic shifts in participants' postures, conversational rhythms, and prosody. These changing arrays of postural configurations demarcate the division of the continuous flow of interaction into discrete segments. By indicating that something new is happening, these changes have profound effects on what is communicated. In the classroom, proxemic shifts, tempo changes, and unique lexical choices signal changes in lesson content.

Consequences for Students' Classroom Participation

These interactional configurations are not merely elegant formulations of the structure of classroom events. They have practical consequences for students' participation in classrooms.

The Normative Frame around Classroom Activities

It would be important for educators to recognize that normative aspects accompany, indeed "frame" (Goffman, 1975) the academic aspects of schooling. The academic aspects of schooling are well known. It is axiomatic that students must master academic subject matter in school. But these academic concerns do not operate in a vacuum. They are cast within a normative framework. Matters of interactional form are united with matters of academic content along this normative dimension.

Another way to characterize the normative aspect of the classroom is in terms of the teacher's evaluation of students' performance. Students' actions in the classroom are not only evaluated in terms of academic criteria (i.e., correctness), they are simultaneously evaluated in terms of social criteria (i.e., appropriateness).

The rules and regulations involved in such evaluations have a special quality, especially as they are made available to students in the classroom. The criteria used to evaluate students' behavior are seldom stated in so many words. The appropriate means to achieve academic ends are not sent home in notes to parents. The lists of "classroom rules" that teachers post on bulletin boards are general statements of decorum (e.g., "no running in class," "respect others' property"). They do not tell students <u>how</u> to apply these general statements to specific situations. They do not tell students how to cope with different rules when prescribing competing behavior for the same

situation (e.g., "no running" versus "leave the room quickly in case of fire").

In short, classroom rules are "tacit" (Garfinkel, 1967; Cicourel, et al., 1974; Mehan and Wood, 1975). They are seldom formulated in so many words. They form part of an implicit background of knowledge that students must learn just as much as they must learn times tables, state capitols, and color words if they are to be successful in the eyes of teachers and other school people in positions to evaluate student performance.

Interactional Competence in the Classroom

The normative frame around these academic aspects of the classroom requires students to employ "interactional competence" in order to be successful participants in the classroom community. This interactional competence involves a "communicative" and an "interpretive" dimension.

In general terms, "communicative competence" (Hymes, 1974) in the classroom involves knowing that certain ways of talking and acting are appropriate on some occasions and not others, knowing with whom, when, and where they can speak. This requires students to bring their action into synchrony with people who are already talking. To do so, they must employ classroom rules for taking turns, produce ordered utterances, and make coherent topical ties.

More specifically, competent participation in classroom events involves the production of proper replies to teacher-initiated action, and the generation of effective initiation acts. Being a competent respondent, in turn, involves a number of skills. Students must recognize the turn-allocation procedure that is operating in a given teacher-student exchange and provide the behavior that is consistent with those normative expectations. Students must recognize the speech act being initiated by the teacher, and provide the kind of reply that maintains symmetry between initiation and reply acts.

In order to contribute their own topics to lessons, students must first find an appropriate place to introduce their interests, and having gained access to the floor, they must maintain control over it. The former involves recognizing the completion of a prior Initiation-Reply Evaluation sequence and the completion of previous topics. The latter involves having topics "picked up" by others. In order to have topics incorporated into the lesson, students need to introduce new and interesting ideas, not merely comment on the prior course of events. This aspect of communicative competence implies that students are active participants in the contexts in which they are acting. They are constructing their environments, not passively responding to them.

Because classroom rules are tacit and implicitly communicated, students must engage in active interpretive work. Students interpret implicit classroom rules that specify different courses of action and vary from occasion to occasion. Successful participation in the culture of the classroom involves the ability to relate behavior, both academic and social, to a given classroom situation, in terms of implicit rules. This involves going beyond the information to understand the teacher linking particular features to general patterns by filling in contextual information (cf. Cicourel, 1973).

Competent membership in the classroom community, then, involves the integration of academic content and interactional form, i.e., providing factually correct content in the interactionally appropriate form. The separation of form and content leads to inappropriate behavioral displays in the classroom. This is as much the case for the student who provides content without form as it is for the student who provides form without content. The student who knows academic information, but does not know how to provide it (e.g., has not mastered the procedures for gaining access to the floor--bids for the floor when replies are acceptable, or replies when bids have been called for, etc.)

will be out of phase with classroom interaction, as will the student who knows how to get the floor, but doesn't know what to do with it once (s)he has it. It is in this disjuncture that teachers' expectations (Brophy and Good, 1974) are built up, and worked out interactionally.

Postscript on "Structures"

While Erickson and his group have expanded the notion of participant structures to include the full range of behavior-context relations, both Phillips and Erickson employ the concept of structures in their discussions.

I am not convinced that either usage has met the criteria established by Parsons and Garfinkel (see Mehan and Wood, 1975: 181-182).

The first criterion for a structure is that it exhibit upon analysis the properties of uniformity, reproducibility, repetitiveness, standardization, typicality, and the like. This is the criterion of invariance.

The second criterion insists that this invariance be independent of particular production cohorts. This criterion adds the requirement of independence to the invariance. The invariance of a structure must not be accidental or convertible by the will of particular persons. A structure must be independent of transformations of context.

These two criteria are generally associated with Parsons. Garfinkel has added two additional criteria. He says that structures must be a "phenomenon for members' recognition." That is, candidate structures are not to be accepted unless participants are oriented toward them in their course of interaction. Garfinkel's final criterion elaborates the notion of members' recognition. It says that the structures must be a practical, situated, social accomplishment; that is, be visible in the interaction of people in their daily activities.

Until it is demonstrated that these critera are met, I'd modify the notion to "patterns of participation" or the like. In true reflexive fashion, this

change leads me to change the title of the paper, which means we could start this loop all over again!

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THE SOCIAL-INSTRUCTIONAL UNIT: AN ORGANIZATIONAL PERSPECTIVE

Ray Rist
College of Human Ecology
Cornell University

The Social Setting: An Overview

To analyze the sociocultural environment of American schooling, we need first to look at the groups involved directly or indirectly in the schooling process. Using the social-instructional unit as our vantage point, we see that the unit itself--students and teacher--represents segments of the community, possibly distinct or even conflicting segments as when they are members of different ethnic groups or socioeconomic classes. Within the formal organization of the school system, the teacher is subject to evaluation and control by the administrative hierarchy, symbolized by the principal. Other teachers, as peers and professional colleagues, also form an important part of our teacher's social environment. The nonacademic staff provides regular supporting services which may affect the teacher's instructional choices; procedures that impose extra work on the maintenance staff, for instance, may be frowned upon. Evaluated by the achievements of their former and current students, teachers may feel constrained to stress certain skills which others will expect the students to have acquired, even when they themselves question the importance of these skills.

Through their students they are linked with the families and neighborhoods of the school. These families may or may not participate actively in formal auxiliary organizations such as the PTA, but their perceptions and interpretations of the school and the school-related experiences of their children do

affect the children's interpretation and response to school. When parents become more vociferously involved, they may become lobbies for particular choices in curriculum or classroom organization, exerting both direct pressure on the teacher and indirect pressure through the administrative staff. Obviously teachers, like principals, often are subject to many irreconcilable demands and expectations. Besides the direct service relationship between the teacher and his or her students' families, the school and its personnel also have a transactional relationship with the community. Public schools depend on taxpayers for goodwill and fiscal support to maintain and improve their facilities and programs. Because school systems are considered community institutions, they generally are overseen by a board of education typically composed in part (if not wholly) of citizens who are not professional educators. Election or appointment of board members ties the school system directly into the political sphere of the community, and as the political sphere is intimately linked with the economic, into the latter as well.

Ogbu's (1974) study of schooling in a low income, ethnically heterogeneous neighborhood depicts the interconnections among these groups: Students, parents, school personnel, and "taxpayers"--those prosperous community members who lived outside the neighborhood and effectively controlled community-level decision making with respect to schools. The divergent viewpoints, interests, and strategies of each of these factions, coupled with their differential access to economic and political resources, help perpetuate a high rate of school failure. School performance of low income minority students, Ogbu argues, is an outcome of the adaptive strategies they adopt to cope with conflicting pressure of teachers, peers, and parents in the face of limited occupational opportunites. The result of the combined strategies of students, parents, school personnel, and taxpayers is an adaptive process which effectively

maintains the community status quo.

When we expand our scope to this breadth, it becomes extremely difficult to specify the complex interrelationships which affect the classroom microworld from which we began. Ecological analysis, like any other systematic research, requires that we select an area on which we concentrate--for example, the interface between the school as a community institution and the various community interest groups competing for influence. Other facets of the total ecological relationship then can be traced out in less detail or as they emerge as important to the problem at hand (cf., for example, Kelley 1977).

The Social Setting: Social Constructs and Perceptions

Consider once again an elementary school classroom: with what definitions of the situation do participants begin and how do these evolve over time? Neophyte teachers are expected to learn how the school works as an organization; their first years also are spent learning the prevailing values, categories, and behavioral norms associated with their roles as teacher and colleague. As we might expect, new teachers also often have a rather different conception of the classroom as a sociocultural situation than do more experienced teachers. Teachers of low income students may make different assumptions about the classroom than teachers of middle income students. At the secondary level, teachers of remedial or vocational classes are likely to define the situation differently than teachers of accelerated or college preparatory classes. In other words, the prior cultural heritage or class orientation of the teacher is only one factor in his or her definition of the situation. Equally important is the teacher's ongoing experience in the classroom and in the school. The evolving definition is constructed from assumptions about the students as types of people, about one's own goals and available means to implement them, about

probable expectations of other participants, about the school as a context in which to work, and about ecological constraints on what happens in the classroom.

Wolcott (1967) reports that even teachers who began their sojourn in the Kwakiutl village school of his study with positive and hopeful attitudes toward the students, were rapidly worn down by the difficulties encountered. Their initial definitions of the situation, based on previous experience in quite different school contexts, changed markedly in the course of their (often brief) tenure, as did the goals which they sought to implement and the strategies they used to achieve them.

For teachers, this definition of situation may be more or less explicit, for their role entails thinking about organization and long-term objectives. Students, particularly at the elementary level, may use less systematic frames of reference, but they too define the situation from their own vantage point. They arrive in the classroom with a range of applicable and inapplicable images, from home and peers, from previous schooling experience, and from media to which they have been exposed. One of the first lessons they are expected to learn, however, is the "official" situation definition. Classrooms are places in which certain types of events have priority over others. There are particular kinds of limits, varying with the classroom, on the alternative courses of action open to students. In time, students learn that there are types of students (like "dumb kids," "smart kids," "good kids," "bad kids"), and types of teachers, types of activities and types of sanctions. All of these enter into their evolving definitions. Kindergarten and primary grades are often tacitly or explicitly understood by educators to provide for enculturation in the official situation definition and in the skills necessary to achieve it, such as "paying attention," "following instruction," "sitting still," "waiting for a turn," and so forth.

The direction in which the situation definitions of all participants change in the course of their interaction with one another, depends heavily on the communicative events in which they share. As Gearing (1973:3) points out, their definitions may converge or diverge. These frames of reference both influecne the interpretation of ongoing communication and evolve under the impact of this communication.

The Social Setting: Influences on Instruction

Within most social-instructional units, instruction is influenced by the following conditions. First, in each grade, students are expected to acquire specific academic skills measurable by achievement tests. This is one of the teacher's primary responsibilities: to ensure that all or most of the students in his or her class meet objective (i.e, external) standards of achievement. Teachers believe, with good reason, that they themselves are evaluated largely by the accomplishments of their students--by their superiors, by their fellow teachers, and by parents. Second, this learning must be achieved within the limited time period of the school year. The students must "get through" the material whatever the cost to other promising kinds of learning. Third, the students must be ranked relative to one another and relative to their presumed ability. This involves two issues, graded classroom levels and individual grade reports. Like the open classroom concept in the school studied by Goetz (1975), upgraded schools usually are new labels for unchanged classroom organization (cf. McLoughlin 1968). Even when students move through grade levels in different subjects at varying paces, the grade levels themselves remain important as "public," "objective," "measurable" criteria of student evaluation. The elimination of letter grades in favor of conferences also changes neither the emphasis on measurable student achievement nor the recording of related

evaluations. Fourth, student achievement levels both within classes and through the graded class sequence are a major determinant of student prestige. The better the academic performance and the more advanced the grade level, the more worthwhile the student is considered by teachers, the principal, and other students. Teachers, too, gain prestige as they rise in the grade sequence with a marked jump from elementary school (with a general curriculum) to high school (with specialized courses).

As Sarason points out (1971: 221-222), substantive changes in school organization or in classroom life cannot be made by following a master formula that is not adapted to the particular school society. Neither can they be achieved without important kinds of unlearning and relearning by those responsible for the status quo. Such relearning can take place when teachers are enlisted as active colleagues in the innovation process, and when they are granted the support and leeway necessary to allow risk-taking. When intended changes go against ingrained cultural values and beliefs, these values and beliefs must be clarified and reassessed before change can be accomplished.

Postscript: "Back to the Bridges"

As I had noted in my letter to the Far West Laboratory Principal Investigators in November 1978, I was concerned that in our "Seminar of Scholars" meetings we tended to lose sight of the work previously done in the various bridging reports. It was for that reason that I argued for a "Back to the Bridges." That is still my concern, especially given the limited time frame in which the mini-inquiries need to be conducted. The above paper has sought to try and elaborate further some of the concerns of the Lally, Ramos, and Rist bridge of August 1978. Of primary concern is to avoid a reification of the social-instructional unit as simply a collection of psycholgical processes.

An ecological perspective necessitates a concern with social organization, social structure, and patterns by which social understandings are recreated and sustained.

The last section of the paper, "Influences on Instruction," was added because of my concern that we continue to have in mind the long-term objectives and goals of the study. If we are indeed interested in making an impact upon instruction, it is critical that we don't lose sight of how we are going to get there from here. Further, if we see our impact as being one which prompts institutional change in the school in general, and the social-instructional unit in particular, then attention to the dynamics of social change is necessary.

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OUTCOMES AND THEIR RELATION TO WHAT CONDITIONS ARE CONDUCIVE FOR LEARNING

Stephen Hamilton
College of Human Ecology
Cornell University

Reductionism has been a tool for the advancement of science for several centuries. Theories that simplified phenomena have been tremendously productive of knowledge. For example, the identification of the basic elements as the components of all matter, of molecules as the building blocks of matter, and of atoms as the components of molecules, have all been central to advancement in the physical sciences. These discoveries were made by people who wanted to know what the world was made of. They searched for understanding of the Truth. But Thomas Kuhn's treatment of the history of science serves as a warning that there have been many changes over the centuries in what was accepted as the truth about the universe. We had better praise the physical scientists for laying the foundations for a highly developed technology than for revealing Truth. That is, reductionism has succeeded in allowing us to exert more effective control over a variety of natural phenomena. Our current conceptions of what is true about these phenomena may well be transformed substantially within the next century.

Reductionist thinking, I would argue, has been more useful in developing technologies than in establishing Truth. There is another limitation to the reductionist approach and that is that it works better for some phenomena than for others. Or at least its application in the physical sciences in modern history has yielded greater control over some phenomena than others. The Newtonian vision of particles of matter interacting with each other has proved

wonderfully fruitful in chemistry and some aspects of physics, but until this century Western theories of optics were relatively crude compared to Chinese theories, which were based on waves rather than particles.

The language of dependent and independent variables is a reductionist language. The behaviorists have managed to use a terrible reductionist theory of learning to produce a technology of instruction that has some real power, particularly among children who do not respond well to conventional instruction. They have not, however, revealed the Truth about human motivation and learning, despite B.F. Skinner's claims. Reductionism flourishes in explanations of human behavior because it offers an easy way to understand and control what otherwise seems hopelessly complex. Man is nothing but a naked ape. Human interaction is nothing but a game. Real and imagined behavior are nothing but the sublimation of erotic impulses.

Here, more obviously than in the physical sciences, reductionism is most useful as the foundation for technologies (in which class I include therapies). Reductionist theories are less widely accepted as offering a complete treatment of human beings than are reductionist theories as completing the Truth about physical phenomena. And it is more obvious that important phenomena are not brought under control by the reductionism theories used in the social sciences. The methaphor of an ecological approach is appealing precisely because it promises to illuminate and thereby bring closer to being under control aspects of human behavior that have been resistant to control when approached with reductionist theories.

An ecological approach does not displace reductionist approaches. Ecologists in the natural sciences know and use chemistry, biology, and physics. But the phenomena to which they attend are different. The ecological approach is a framework for relating a much larger number of phenomena than any single

reductionist theory or system of theories can handle. While a biochemist might study a particular grass's ability to fix nitrogen, the ecologist is interested, for example, in the mutual relations among the grass, the cattle that feed on it and the grass's contribution to holding the soil against erosion caused by rainfall. The ecologist may well need to consult the biochemist, and (s)he certainly would not dismiss the biochemist's work as trivial, but (s)he is addressing different questions and applying a different framework to his or her study of the grass.

To pursue my illustration a bit longer and to try to apply it directly to the question at hand, relating the grass and the cattle that graze on it as dependent and independent variables is patently absurd. Neither is the cause of the other. Among the questions of interest are how much grass is required to support a particular number of cattle and at what point would the cattle become so numerous as to threaten the continued existence of the grass. Neither question can be answered without knowing about the rainfall, alternative sources of forage and many other features of the environment.

The ecologist is concerned, in other words, with patterns of mutual interaction among many forces rather than one-way cause and effect relations. The ecologist's frame is the entire context in which that interaction occurs. Depending upon the question being asked, that context is defined as a few square feet, many square miles, a region, a climatic zone, or the entire earth.

An ecological perspective is not itself a theory. Theories may be developed within an ecological perspective. Ecological theories may incorporate elements of reductionist theories, but they may not be limited by reductionist thinking. In particular, they must incorporate many influences rather than a few. They must allow for mutual rather than one-way causation. And they must include the context in which interaction occurs.

An ecological theory of teaching cannot reduce the process of teaching and learning to something like Teacher Stimulus-Student Response. Rather, it must allow for the impact of students on teacher behavior, and the complex patterns of behavior that result from mutual rather than one-way influence. Furthermore, it must leave room for the large influences that affect both teacher and student behavior independently of the learning setting ("exogenous variables"). And within this network of mutual influences, attention must be paid to the influences of the impacts upon the physical setting.

A theory has to be about something. Perhaps it is time to select a question or set of questions that research using an ecological perspective might illuminate. The way in which the question is stated is crucial to preserving the ecological perspective. A question of the form, "How do students who have been instructed with the curriculum x score on test y?" treats the test results as the dependent variable and the curriculum as the independent variable and ignores the contextual issues and the possibility that the curriculum might not be the same thing when taught to different groups of students or by different teachers.

Just as the natural ecologist draws on reductionist sciences, I think we must make use of simple-minded ideas about and measures of outcomes. What will make our approach ecological will be providing more adequate information about the context in which outcomes are achieved. A major pitfall in research on outcomes--that is, process/product research--has been the unexamined assumptions that: (1) a particular product is best achieved by only one process; and (2) a particular process leads to identical products. Researchers have probably been aware of the absurdity of both assumptions, as have teachers, but when policy makers see that reading scores increase by so much with curriculum x, they want curriculum x and nothing else.

While we must attend to outcomes, we must begin with the assumption that the same narrow outcome, such as satifactory reading test scores, can be achieved by a vast number of combinations of curricula, teaching styles, teacher types, student mixes, classroom arrangements, etc. Furthermore, we must beware of making judgments about particular combinations or patterns of these factors solely on the basis of such narrowly defined outcomes. As one example of this danger, my colleague, John Condry, has concluded from a review of studies on behavior modification apporaches to instruction that concrete rewards have "hidden costs" that show up in subsequent reduction of curiosity and self-motivation. [Enemies of exploration: Self-initiated versus other-initiated learning, Journal of Personality and Social Psychology, 1977, 35, 459-477.] Condry is saying that tokens may improve immediate achievement but they reduce future achievement.

Terms like "pattern" and "flow" seem to me more appropriate to an ecological framework than dependent and independent variable because I hope ecological research can capture the variety of combinations of conditions in which learning takes place and then help to identify particular combinations that seem particularly potent. The result would not be rules for teachers, because implicit in my vision is the admission that an exhaustive enumeration of all "potent" combinations of conditions in learning environments is impossible. But some insights ought to be forthcoming that will help teachers and others make more informed choices regarding those aspects of the learning environment within their control.

To take one more crack at my point about outcomes, I am very interested in the question of what conditions are conducive to learning. I simply want to define learning much more broadly than test scores and to include in conducive conditions not one set of conditions but many.

I remain optimistic about the strategy of conducting small-scale inquiries as a means of progressing in this direction. I am intrigued by the set of questions generated by the teachers involved in "interactive R&D." I hope that inquiries informed by these and other questions will be guided by an ecological perspective and that points of intersection identified through those inquiries may serve as the "ground" for one or more ecological theories.

HOW AN ECOLOGICAL APPROACH TO THE STUDY OF TEACHING MIGHT CONTRIBUTE TO THE IDENTIFICATION OF EFFECTIVE PRACTICE

Bernard McKenna
Instruction/Professional Development
National Educational Association

In the preface to their paper, Toward An Ecological Theory of Teaching: A Starting Point, Dawson, Tikunoff and Ward point out that the "Proposed theory is an attempt to recognize and attend to the multiple elements that are beginning to crystallize in our own work as well as in the work of others, elements which are particularly important for successful enactment of teaching and learning within an environment called the classroom."

The use of the adjective successful as a modifier of both teaching and learning appears, at least, to imply that part of the process of generating an ecological theory of teaching involves assessment of or judgments about the quality of teaching and learning acts. And since quality determinations are almost always to some degree goal related, it would be surprising if a process concerned with "successful enactment of teaching and learning" did not result in some assumptions about what promotes learning. After all, a large responsibility of the school, some argue the only responsibility, is to promote learning on the part of students.

In a footnote to page one of the Dawson, Tikunoff and Ward manuscript, the implication that some assessment of goal achievement is likely to be (or should be) part of the EcoTheory development is heralded in the statement that references to teaching and the teaching environment are meant to "incorporate both teaching and learning acts." The inclusion of learning acts instructs us (at

least this reader) that some thought must be given to what produces learning as compared to what does not. Otherwise, how shall we know a learning act when we encounter one?

Thus, I return to the orginal statement that prompted this paper:

> One major reason for studying teaching-learning in terms of the interrelationships of all its elements is to learn whether or not (and if "whether" then which) some particular elements of combinations of elements in particular interactions with other elements are more likely (for certain goals and objectives, under particular conditions and at given times) to improve teaching-learning than other elements or combinations of elements in other interactions.

Including this purpose as part of an ecological theory of teaching should not diminish or otherwise adversely affect other important purposes. Certainly some other purposes will need to be pursued first, i.e., identifying elements, and developing understanding about the relations among elements and "the dynamics of interaction over time." But such ordering of activities should not neglect the full range of elements in the ecology of classrooms, including outcomes.

Besides, including the purpose of identifying effective practice promises to strengthen motivation for gaining greater understanding of the ecological nature of teaching and learning.

To illustrate how an ecological approach might look "different from a carefully constructed multi-variate analysis..." the following scenario and discussion is offered.

Scenario

A teacher of beginning reading individualizes in a number of ways, in one way, or hardly at all: s/he individualizes within a subgroup through oral performance by one child while others follow along; s/he assigns different

materials to different children to be pursued independently; s/he tutors individual children for specific purposes; s/he responds to an individual child's request for assistance; or s/he orchestrates several of these at about the same time. These processes occur in a particular setting, a unique social and emotional climate, with a unique student population and with specific "props," i.e., curriculum objectives, materials, time frames and in the presence of a variety of disruptions.

As a result of whichever activities are pursued (or combinations of them), the teacher assesses individual learning progress, evaluates the effectiveness of a particular activity(ies) for achieving the objectives, and makes decisions (consciously or unconsiously) about the appropriateness of the activites for accomplishing the same or similar objectives at another time.

An ecological approach to the study of teaching takes all these into account. It gathers information of a variety of kinds and through several processes: observation of instructional activities and contexts; analysis of recorded interactions; description and collation of recorded curriculum goals and objectives; study of teacher and student characteristics; consideration of the teacher's evaluation of achievement of objectives; and others.

Those who have given thought and leadership to the concept of EcoTheory have recognized and called to attention the importance of training for those who conduct such studies. It should be expected that skilled, experienced ethnographers[4] (especially those with background as teachers) who possess advanced formal preparation in curriculum and the instructional process will produce reliable descriptions of instructional processes, contexts, and student and teacher population behaviors and characteristics. That is, it might be

4. Hereafter referred to as ecologist-ethnographers.

expected that different ecologist-ethnographers examining the same ecology will produce similar descriptions.

Carry this one step further. Such skilled ecologist-ethnographers are in a good position to analyze the interaction among process, context and the variety of other elements relevant to EcoTheory and to draw some conclusions, however tentative, about the effectiveness of specific processes within specific contexts for particular purposes.

Such postulating should not be on the basis of single or narrow examination of a single ecological setting, or by a single ecologist-ethnographer.

The process might go something like this. A skilled, experienced ecologist-ethnographer, following the examination of particular instructional processes in several ecologies and taking into account the interactive influences of various elements, concludes that a particular strategy or combinations of strategies within particular contexts appear(s) highly effective for accomplishing a stated purpose, e.g., reading comprehension.

At that point other ecologist-ethnographers similarly trained, skilled, and experienced examine the same and perhaps similar ecologies where the same or similar instructional objectives, e.g., reading comprehension, are being pursued, with the purpose of drawing some conclusions (however tentative) about the effectiveness of the process identified as promising by the original investigator.

Then comes the time for caucusing for consensus. If there is consensus, some tentative hypotheses might be formulated on the effectiveness of a particular process or processes for specific purposes with the context of agreed-on ecological elements being clearly and completely described. Then the whole process might be replicated in other similar settings for further confirmation (or denial) of the hypotheses.

The Ecologist-Ethnographer as Evaluator

It has been said that the unexamined life is not worth living. In old clichés there are sometimes the seeds of lasting truth. Apropos to the subject at hand, one might paraphrase the statement to read: "Unevaluated teaching and learning acts are not worthy of pursuit."

So when understanding of the elements and their interrelationships and influences has been achieved, it would appear that professional ecologist-ethnographers would want to examine critically those elements and their interaction in terms of their intended goals and objectives. In fact, it is difficult to imagine that they would not--unless, that is, they choose to behave like some former-day (and latter-day) sociologists who have been prone to identify and describe the syndromes of institutions and their functioning without even citing the issues such identification and description raise, let alone suggesting possible effective approaches for their resolution.

Another consideration prompts the recommendation that ecologist-ethnographers should eventually assume evaluation roles. Outcomes, however defined (the assumpton here is that they will be defined in the broadest terms to include learning processes, performances, behaviors, competencies, attitudes--inasmuch as the state of the art and science permits the identification of these qualities), have interactive and reciprocal influences on all the other elements. Thus, if an ecological theory of teaching is eventually to "heed the relationships among the complex set of components that constitute the [total][5] environment of teaching,"[6] it must heed the cyclical nature of teaching-learning, i.e., the interactive relationship among learning outcomes (broadly conceived), teaching behaviors and other elements in the ecological unit--the classroom.

5. In brackets mine.
6. Dawson, Tikunoff, Ward, op. cit., pg. 3.

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THE UNEXPECTED EVENT: THE METHODOLOGICAL FEATURES OF AN ECOLOGICAL THEORY OF TEACHING

Reyes Ramos
Center for Urban Studies
University of Texas at Arlington

Unexpected events occur all the time. As we go about out daily lives, we often experience an unexpected event--an event which is not planned or expected and which disrupts the expected flow of activities. Such an event may happen because we cannot know everything about our physical and social environment in order to control it. Even if we did, it would still be difficult to prepare a contingency plan to deal with every imaginable event that might happen.

Although unexpected events are problematic, there is a positive side to their occurrence. Unexpected events may function as a methodological device which a field researcher may use to discover how people socially produce and cope with their practical circumstances. For example, when an unexpected event occurs, the people experiencing it manage the unexpected event in ways that reveal what they take into account. By contrast, when people manage an expected event, they usually do not reveal why they are managing the event in a particular way. They do not explain their actions because there is no reason to: everything occurs as planned. But, when an unexpected event occurs, or when things do not work out as planned, people feel obligated to explain why things went "wrong." It is in this sense that the occurrence of an unexpected event may be seen as positive.

The purpose of this paper is to show how an unexpected event can function as a methodological component of an ecological theory of teaching. In so doing, it will illustrate how an unexpected event can serve as a research strategy

which can help field researchers discover how classroom activities in public schools are socially produced and managed in terms of the immediate and the larger environments in which they are embedded. In addition, I will delineate the analytical features of unexpected events. To locate the unexpected event within a public school setting, I will first present an ethnographic account, and then present some of the salient features of unexpected events.

Looking Normal

In doing research in an elementary school, I observed what went on in different classrooms. The ethnographic account which follows came from that body of data. One classroom I observed was that of Rose Jamison, who taught fourth grade. She allowed me to observe her classroom all of one day and suggested that I meet her before school in the teachers' lounge so that we could walk to her classroom together. I met her as instructed.

An Unexpected Event

We walked to the classroom and I opened the door for her. She paused at the door and then she walked into the room and stood near her desk without putting her books down. I surveyed the room and commented to myself on how organized and clean it looked. I almost shared this thought with Rose when she spoke:

Rose: My God! Can you believe this! I'll fuss his hide. Damn and double damn!

Ramos: I don't understand.

Rose: He took it down, all of it.

Ramos: What?

Rose: My science lesson. The janitor took down the projector. I was going to show the class a movie. Now I have to revamp my whole morning. How could he do that to me? I bet he's mad at me for complaining that he wasn't doing a good job of cleaning. And he really cleaned me out.

As she told me this, she put her books down and started to see if she could do the science lesson without the movie. But, before she could reorganize her lesson, the bell rang and the children started to come in. As the children took their seats, she said, "Forget the science lesson, we'll do reading first." We both gave a sigh of relief. She started the day with the Pledge of Allegiance, the taking of attendance and the collecting of lunch money. After this, she asked the children to get to their reading groups. As they did so, she called me to her desk and asked if I would take her slow reading group. (I assumed she did this because she knew that I had taught school before.) I said I would.

However, Rose told me later that when she restructured her lesson plans, she had to ask me to take a reading group because she forgot that a parent was coming later in the morning to help with the reading lesson. Thus, she found herself with another unexpected event later in the morning. The parent-helper arrived and Rose had nothing for her to do except "busy work."

Although the description of what happened is straightforward, more needs to be said about it. First, the missing film projector was an unexpected event for Rose and for the students. Rose had planned on showing a movie for her science lesson, and the missing film projector caused her to alter her plans. The reading lesson was an unexpected event for the students because they were expecting a movie. Thus, when they got a reading lesson instead of the movie promised them the day before they knew something was "wrong." Some of the students asked about the movie and expressed their unhappiness over the situation. Their behavior did not make life any more pleasant for Rose.

Second, by doing the reading lesson first, Rose created another unexpected event for herself, for the students, and for me. I had not planned to do a reading lesson that morning, and I ended up doing one. The students ended up

having their regular morning schedule altered. When the parent came in later expecting to do a reading lesson, she was asked to run off some dittos. I later learned the parent felt that running the ditto machine was a waste of time.

Rose did not explain to the parent why she was asked to run off the dittos. This was unfortunate, since this was the parent's first time to help in the classroom and she was asked to do what she considered to be "busy work." It was also unfortunate because the parent got to see classroom activities in a somewhat disorganized fashion.

Finally, both unexpected events were research opportunities for me. The occurrence of these two unexpected events revealed two important aspects of classroom life. First, it revealed the relationship between the janitor and the classroom teacher. Once this was revealed, I, as researcher, began to look into this relationship. I made it an object of study to learn about the relationship between Rose and the janitor, and between the janitor and other teachers. Second, the unexpected event revealed something about the way this particular teacher used parent help with teaching reading by having the parent take the slowest group. Again, these things called attention to things that needed to be looked into. In other words, what was revealed functioned as cues which alerted me as researcher that there was more than met the eye.

One might say "so what" in response to this description of Rose, the janitor, and the parent helper. It may appear that there is nothing new being said. But, the point is that the occurrence of the unexpected events revealed what was actually happening in the particular classroom under study. True, we may know that janitors make trouble for teachers in general, <u>but</u> we may not know that "our" janitor in "our" school is making trouble for "our" particular teachers under study. Moreover, if it is happening in "our" school (where we

are doing the study), we need to discover the extent of the trouble and how it impinges on particular teachers and on particular classroom activities, such as reading and science lessons. Therefore, I suggest that if we use unexpected events as research strategies we can discover how classroom activities are socially produced and managed, and how the larger environment (i.e., the rest of the school and the community in which the school is embedded) influences the production and management of classroom activities.

Small Group Life and Unexpected Events

If we assume that an ecological theory of teaching is a theory of discovery, then the unexpected event is very central to this theory. Discovery can occur whenever an unexpected event occurs and the people under study reveal those things which they take into account but which are not obvious to the researcher. The relevance of the unexpected event for an ecological theory of teaching will become more evident when the researcher is aware of the analytical features of unexpected events.

Unexpected events occur when the ongoing activities of people clash. The occasion of juncture where people's ongoing activities fail to mesh produce the unexpected event. The unexpected event, then, is an event which is unexpected, which is not planned by the person who experiences it, and which disrupts the expected flow of activities and causes a person to alter his plans. I propose that an unexpected event occurs for reasons or conditions such as the following:

1. Several strata or other social locations may exist simultaneously in the social order.

2. People work on the assumption that others share the world they take for granted.

3. In carrying out their daily activities people interact with others who may occupy a different stratum of social reality than they do and who may view the world differently.

4. The ongoing activities that people create to manage their daily lives at times do not mesh with the ongoing activities of others.

5. This lack of meshing may create an unexpected event.

I propose that there can be two types of unexpected events, social and physical. Unexpected physical events are natural disorders such as tornadoes or earthquakes. However, the concern here is with the unexpected social event which is produced by the ongoing activities of people as they manage their practical circumstances.

An unexpected event can be either fortunate or unfortunate. According to Alinsky (1946) any crisis (or, in this case, an unexpected event) can present both danger and opportunity. When an unexpected event occurs, situations tend to become undefined and a person can either take advantage of the situation by redefining it to fit his needs or he can be immobilized by its ambiguity. When things work out to a person's advantage, whether or not through his own efforts, the person tends to define the unexpected event as a fortunate event. Societal members make such statements as "If Joe hadn't passed by, I don't know how in the world I would have managed"; "If it had not been for the train, we would have been late."

Unfortunate events are usually referred to as accidents whose occurrence is attributed to chance. I argue that most accidents do not happen fortuitously. They can result from the non-meshing of a person's ongoing activities. People participate in producing them, as Harris (1970) put it:

> It is a shame that we have only one word "accident" to cover two different kinds of happenings--those that are unintentional, and those that are merely unexpected. For most so-called "accidents" are the latter, not the former; are unexpected by us, even though we have in some way contributed to their occurrence. They are not "accidents" in the purely fortuitous sense.... Every accident is someone's fault, but it takes two to "tangle."

Accidents, then are a form of unexpected event which tend to be generated by the clashing of peoples' ongoing activities. Accidents often are man-made or social events. This point, however, needs further clarification.

Accidents are generally attributed to chance: people tend to imply that they are not planned. Accidents can be planned or they can occur inadvertently. A planned accident can be one in whch a person or a group of persons deliberately direct ongoing activites so as to clash with the ongoing activities of an unsuspecting other. The unsuspecting person, then, can attribute the occurrence of this unexpected event in this life as accidental or unplanned. In other words people can and do schedule unexpected events for others and these unexpected events for others may then be referred to as accidents by those who did not plan them.

For example, the janitor described in the ethnographic example explained the removal of the film projector from Rose's classroom as an accident. The principal and other school persons accepted this explanation because it seemd plausible that such a thing could happen. However, after it was pointed out to the principal that he might take the occurrence of these "accidents" as an object of study, he discovered that there was a "causal" relationship between the accidents and the teachers who complained about the janitor's sloppy cleaning practices. Teachers who complained about the janitor had more, if not all, of the accidents than the teacher who did not complain.

Those accidents which are said to occur inadvertently, I argue, <u>are planned</u>. They are planned in the sense that they are produced by a person's ongoing activities which are <u>planned</u> by that particular person to cope with his daily life. They are not meant to clash with the ongoing activities of others but they do. It is in this sense that I say <u>situations in which persons are not generating unexpected events are rare</u>.

In summary, accidents, whether fortunate or unfortunate, are unexpected events. Their occurrence may make trouble for people just as any other unexpected event which is not labeled an accident.

Organizations and Unexpected Events

An unexpected event can be studied either on an interpersonal level or on an organizational level. From the discussion given we have seen how societal members create unexpected events for themselves. Now I will focus upon how unexpected events are brought about by organizations. In so doing I will show how unexpected events also tell how the macro features of the societal order are created.

Unexpected events which are generated by the ongoing activities of people in organizations can be of two types: those events scheduled by one organization which become unexpected events for another, and those events scheduled by one part of an organization which become unexpected for the rest of the organization.

Events scheduled by one organization become unexpected for another only when they interfere or disrupt the ongoing activities of the other. For example, the scheduled event of taking daily attendance in a public school does not become an unexpected event for another organization such as the city parks department. They are not connected. However, the scheduling by the city parks department to spray the trees around the school building during school hours can become an unexpected event for the school if the spray blows into the school and the teacher and students have to evacuate. As a result they must alter their schedule.

Events that are scheduled by one part of an organization which become unexpected events for the rest of the organization are those that are not

expected by the rest of the organization. These internally unexpected events, like those created by other oganizations, may be disruptive to the ongoing activities of an organization.

It should also be emphasized that unexpected events can be generated from organizations which are not directly related and as a result are not taken into account. That is, an organization tends to take into account the actions of those organizations which are directly related to it. However, it fails to take into account those other organizations which make up the remainder of its external environment. The members of organizations tend to conceive of all other organizations more or less disconnectedly, and when dealing with one of them they forget for the time being its relations to the others.

In conclusion, I contend that if we are going to study the production and management of teaching activities within the classroom and the ways the larger environment influences what goes on within classrooms, we need to use unexpected events as research strategies. If we do not, we will continue to study classroom activities in isolation and classrooms as if they are detached from the social environment that impinges on them.

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TEACHING THEORY: A PRESCHOOLER AT THE POINT OF DEVELOPMENTAL TRANSITION

J. Ronald Lally
Far West Laboratory for
Educational Research and Development

Introduction

Why do I talk about the preschool child in the title of a paper that is to address the theory of teaching? Because I believe that teaching theory is at a position in its development similar to a young child at or around the end of his preschool years and about to make the step to school. The preoperational thought of the child from ages 2 to 7 can be seen as similar to the concrete views of researchers using closed system models, independent/dependent variable approaches and classic experimental designs. In a great deal of teaching research elements and combinations of elements are looked on as fundamentally good or bad, better or worse, or always to be excluded or included. Final answers are sought, ultimate solutions are predicted and events and activities are expected to have firm definitions. This type of concrete thinking is very similar to the thinking of the preschool child. The concrete operational thought of the school-age child and the formal operations of the adult represent the type of thinking into which teaching theory is growing. This type of thinking is able to handle more abstractions, analyze thinking process, and be comfortable with notions such as situational ethics and multiple meanings for behavior.

Movement of individuals from one major developmental stage to another creates confusion and disorientation. People in periods of transition from one stage to another have a vision that allows them to see that old answers are not satisfactory but lack the tools and organizational processes of the

stage they are growing into, to create new answers. I believe teaching theory is in a similar period in its development.

The term ecological theory has been selected in this paper to represent the tools and organizational processes of the next major developmental stage into which teaching theory is moving. The identification of those ecological tools and organizational processes is by no means close to complete. What ecological theorists have not yet done is build coherent and integrated participative observation systems with which one can organize and manipulate the world around them. What has not yet been constructed are observational systems flexible and plastic yet consistent and enduring enough so that one can structure the present, past, and future in terms of each other without undue strain, dislocation, perplexity and contradiction. What has not yet been accomplished is the construction of a system which would allow one to study a situation with a simultaneous consideration of a wide variety of events as though a rich and integrated assimilatory organization were functioning in equilibrium or balance with a finely tuned, discriminative, accommodation mechanism. These complex tasks are what the school-age child has had to do as it tries to understand complex realities.

I see this paper as an attempt to move into the confusion and disorientation that always accompanies movement from one major developmental stage to the next major developmental stage. From that position I will look at where we have been. I will use the analogy of teaching theory as a preschool child in developmental transition because I see so many similarities in world view in both positions. My hope is that the analogy will provide useful cognitive aids for understanding teaching theory and will provide some of the viewing aids that Cohen (1979) has called for. In his paper

he states that we should have "available to teachers and other practitioners, a sophisticated set of lenses through which they could view their own teaching-learning environment and develop an understanding of the forces which shape and influence behavior and interactions in their own schools and classrooms" (p. 3, 1979). This paper deals with the selection of a "set of lenses" that stress the interrelationship of elements, lenses that are ground to assist one to look at the unique displays produced by interrelated elements instead of the static properties of the elements themselves.

These lenses must be carefully selected so they sharpen rather than blur the interrelational view. Lenses need to be constructed and selected for the purpose of ecological viewing. They need to support and nurture thoughts about "invisible elements," i.e., thoughts about the above-mentioned unique displays produced by interrelated elements rather than thoughts about the static properties of the elements themselves. This does not mean that the study of static properties has no value or that attention to individual behavior should be discouraged. It does mean that an ecological view is a fundamentally different view than the view used by most people who view teaching. The ecological lens focuses on moving elements, process traces, transformational structures. It searches out elements that you can't touch, abstractions that you can't see, and properties you can't feel. The ecological approach looks for meaning in the abstract, not the concrete. When one uses these lenses particular behaviors and events lack concrete meaning, for meaning changes as the environmental situations change. The ecological approach helps one to focus on the gestalt.

With the goal of creating such lenses in mind I return to the preschool child in transition who is used in this paper to represent the current state of the theory of teaching. Teachers and researchers using the current methods

for viewing teaching may be viewing teaching in similar ways to the ways preschoolers view reality. Because of this, they may not have been able to see at a level of abstraction and detachment which would allow them to observe a qualitatively different reality that if available to their view would make a different sense of events to them.

The Lenses of the Preschool Child [7]

A Perspective

One of the major stumbling blocks to communication and understanding between adults and children is that children and adults hold qualitatively different views of reality. The young child does not see things the way adults do and most often adults cannot believe that young children cannot see what is obvious to adults. The young child age 2 to 7 views the world in semi-symbolic ways through lenses that cannot handle much abstraction. The reality that results, the world they believe exists, is different from the adult world. The young child looks through lenses that see concepts as action-ridden, imagistic, and concrete. Classification schemes are simple, cause and effect relationships are lax and the child is unable to form a concept of chance or probability. The lenses create a reality that is slow, static, and concerned more with immobile eye-catching configurations than with more subtle, less obvious components. The lenses of the preschooler focus outward and are unable to see the impact of his effect on others. The preschool lenses blur action-contemplative and representational thought. The preschool lenses sharply focus on empirical success or failure.

7. A great deal of the material about the abilities of the preschool child was taken from John H. Flavell's classic book, The Developmental Psychology of Jean Piaget, Van Nostrand, New York, 1963.

Lens 1: Viewing States--Not Viewing Transformations

The preschool child is much more likely to focus on the successive states of a display than on the transformations by which one state is changed into another (Figure 2).

Figure 2

Viewing States/Viewing the Process of Transformation

The preschool child asked to guess how many pieces of pie would be missing from the fourth pie is most often unable to look at the total display and see systematic change. The preschooler looks independently at State 1, then at State 2, then at State 3, and can draw no conclusion about State 4 because he cannot see the seriated process. He only sees isolated displays. If one views State 1, leaves it and views State 2 independently seeing State 2 as independent of State 1, then one is not inclined to draw conclusions about what State 3 and 4 will look like. If a researcher/teacher looks at the physical environment independent of social context and then looks at social context independent of physical environment it is possible that very important realities will remain invisible to the observer. The process of transformation is

uncovered by using lenses which enable the viewer to see abstractions. The process of transformation is not discovered by staring for long periods of time with glasses that help one to see static events even if one can see them very clearly and describe their parts in detail. As the preschooler moves into school he switches lenses and can see the hidden connections among states. The ecological researcher must also wear the lenses that create the perspective of searching for connections among states. This seems to be accomplished initially at least, by having people from different disciplines look at the same displays, communicate what they see and search together for hidden connections.

Lens 2: Centration--Lack of Decentration

Centration is attendance to a single, striking feature of an object to the neglect of other important aspects of the object. Examples of this type of behavior are the conservation of matter experiments made popular by Piaget in which preschool children deny the equivalence of matter because they are drawn to one or two features of an object and that feature, i.e., tallness, fatness, etc., "hyponotizes" the child from seeing any other part of the object. Centration behavior often leads to conclusions about the object that are inaccurate. For the preschool child the pull of the most evident attribute often leads to conclusions about the object based on that attribute. It is as if the child just cannot see the other attributes. The preschool child has great difficulty decentering, that is taking into consideration other important aspects of the object. The child has learned to use the inquiry tool of attending to obvious differences. That tool might, for example, be useful to form an understanding of the concept more based on height. The tool has been useful in organizing the preschool

environment and has worked for him when height was the only attribute that varied. His tool proved his undoing when more than one attribute varied. Reliance on a useful tool can often make crucial attributes of an object invisible to the preschool child. The tool has restricted his vision and limited his understanding of the experience.

All inquiry tools seem to have this effect. At the same time a tool helps one to see things, the tool also, while one is using it, restricts one from seeing and considering other important aspects of a display.

For example, the psychoanalyst uses the tool of psychoanalysis to order information and process it to help him view personal dynamics that without the use of that tool would remain unknown to the analyst. At the same time the use of the tool restricts understanding in areas where the tool was not meant to be used.

Centration for the teacher/researcher is an important issue to consider. On the one hand we are often drawn to striking features of the teaching-learning process. Often we are unable to see past the crisis, problem, glaring inconsistency, deficit, etc. On the other hand, we are often tricked by our tools into seeing only those things which our tools let us see. Seldom does a teacher or educational researcher see a child as having a body that contains too much lead and not enough iron. Often teachers and educational researchers see children as having learning disorders. Using the behavioral manifestations in the child with high lead and low iron and learning disorders are the same for both maladies--irritability and inattention. Yet high lead and low iron are seldom uncovered by the teacher/researcher using teaching-learning inquiry tools.

Lens 3: Egocentrism

The child repeatedly demonstrates an inability to take the role of the other person, that is, to see his own viewpoint as one of many possible viewpoints. The child does not see any need to justify his reasoning or look for contradictions in his logic. The preschool child can think but not think about his thinking.

A preschool child asked to stand in front of you and point to his right foot will point to the foot opposite his right foot. He will point to your left foot (Figure 3). This egocentrism is not planned

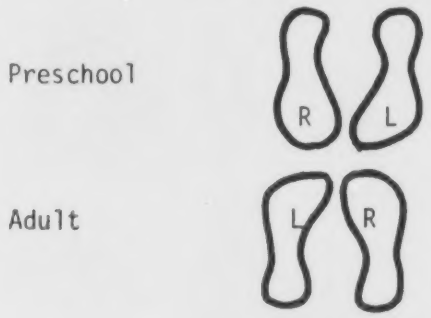

Figure 3

Egocentric Thought: An Illustration[a/]

a/ When asked to stand facing an adult and point to the adult's right foot, the preschool child will point to the adult's foot opposite the preschooler's right foot.

selfishness but an inability to take the position or point of view of others.

Teachers/reseachers as they observe and interact with children can be so blinded by what they want to accomplish, by their understanding of the importance of their goal, by a view of reality dictated by their discipline, by their beliefs and values that are thought to be somewhat

universal, by an inability to see that children have qualitatively different thought processes than adults, and by hundreds of other positions generated from their own unique system of understanding the world, that a good deal of what will happen in front of them will remain invisible. It is difficult to put on the lenses of "non-expectation" and "openness to discovery" but these lenses must be worn in addition to the lenses of our discipline and personal beliefs if we are to see more than our discipline and personal beliefs. It seems like the experiential "eyes of the exploring child" would be useful lenses to wear once in a while.

Lens 4: Equilibrium

The preschool child has practically no stable, enduring and internally consistent cognitive organization. His thinking causes him trouble because he is unable to adapt easily his new experiences with his old cognitive organizations. The preschool child when asked if he lives in San Francisco might answer yes. When asked if he lives in California he will answer yes also. When asked "How can you live in both San Francisco and California at the same time?" the child will very often become silent or deny that he lives in one of the locations. The preschooler is not organized as yet to understand the classification relationships between city, state, and country. Neither, I think, is the theory of teaching ready to handle the relationships among elements. Elements in the teaching-learning process have not been seen as part of a whole and interconnected. The very difficult task lies ahead of developing lenses of viewing teaching that can order and integrate structural properties so that one action in an environmental display can be understood to have the ability to annul or otherwise compensate for another previously performed action and that two actions can combine

to produce a third. What seems to be lacking in teaching theory is what Piaget calls an operation. An operation is a representational act which is an integral part of an organized network of related acts.

Lens 5: Irreversibility

The preschool child cannot trace back over steps of logic to an initial premise. The preschool child cannot check back on himself. Pouring water back into the glass it originally comes from in the well-known Conservation of Volume experiments does not prove anything to the child about the amount of water. Teaching theory seems to be able to handle irreversibility when all the elements studied are contained in a closed system. When, however, elements outside the system seem to cause inexplainable consequences, teaching theory reacts much like the preschool child. Research methods which attempt to deal with open systems often act in irreversible ways because no obvious link can be uncovered between some of the more puzzling elements or element processes. The lens to help in the search for process connections among elements seems a crucial one for people hoping to advance teaching theory in the future. The ethnographic lens seems most helpful for this task.

Conclusion

As the preschooler moves into his 6th and 7th years he becomes a tester and more testable. His thinking becomes more flexible, mobile, and decentered. Regulations take the place of irreversibility and he begins to learn about reversible operations. I feel that teaching theory is moving on a similar course and I think that an ecological focus is forcing the field to deal with levels of complexity that ultimately will yield a better understanding of teaching.

This ecological focus should help one to see things that heretofore have remained in "ground" or were seemingly invisible. McKenna's (1979) very real concern for the improvement of teaching-learning can be addressed by an ecological focus but in ways that often elude those who search for particular combinations of elements that will, if reproduced, improve teaching-learning. I do not think an ecologically focused theory's major impact will be in identifying combinations of elements that should be handled in certain ways in order to create better teaching-learning settings. I feel that once teachers/researchers can make invisible elements visible, solutions will flow and be close to self-evident. It is the use of unique lenses that makes an ecological theory important. The lenses allow one to see obvious barriers to teaching-learning that were not addressed by teacher/researchers wearing different lenses that could not bring the barriers into focus. These obvious barriers once viewed can be dealt with as real and solutions can be created to deal with the barriers. An ecological focus can be directed at an issue a second time to see if the solutions have worked. The impact of ecological theory, in my opinion, will probably be in the development of more artful observers who can create alternative ways of acting after old ways of acting are viewed more clearly.

An ecological focus through a set of lenses that are ground to help one look specifically at unique displays produced by interrelated elements help the teacher/researcher by allowing him to see more, to see new things, to observe processes. This ability to see differently is what helps the teaching-learning process to get better. The ability to see more, to see process, gives people more information about the happenings in their environment. This new information can be used in many ways. One important way will be growth in teaching theory to a new stage in its development.

EDUCATIONAL OUTCOMES AND BOUNDED PREDICTABILITY

Franklin D. Becker
College of Human Ecology
Cornell University[8]

A team of interdisciplinary researchers working to develop an ecological theory of teaching have found that fourth graders in small classrooms have lower reading scores than matched students from large classrooms. Females were less affected by size than males. Classroom physical size also affected friendship patterns, and these were highly correlated with student satisfaction with their teacher and school in general. The effects of classroom physical size on reading scores were mediated, however, by the age and experience of the teacher. Students of younger teachers performed less well under crowded conditions than students of older teachers. This was attributed to the older teachers' considerable experience with a wide range of classroom sizes, thus providing them with the opportunity to learn how to focus students' attention under diverse environmental conditions. They did this by using all the environmental opportunities available (e.g., rearranged furniture to minimize contact among individual students). The "potential" environment was identical, but the "effective" environment, defined in terms of how the available environmental resources were actually used and perceived by teachers, differed dramatically. Finally, they found that students in schools with long interior corridors spent more time on tasks than students whose learning activity was confined primarily to a single locale. There was not a strong relation between time on task and both students and teachers perceived sense of accomplishment and learning. The researchers concluded that student reading performance could be affected by a number of different combinations of setting. The mediating effects of teacher and student characteristics, as well as the history of past actions and experiences each brings to the situation, explains why identical physical environments may play very different roles in classroom life.

Index Hypotheticus

8. Currently on sabbatic leave at the Center for Planning and Development Research, University of California, Berkeley.

Definition of Outcome

An "outcome" is any observable datum one chooses to select, from all those potentially available in a situation, to focus on. The datum may be observed spontaneously, as the behavior occurs; it can be elicited for specific purposes, as in the case of testing and experimental situations; or it can be inferred from other behavior or signs of behavior, as in the case of archival records or physical evidence or use or abuse of the environment reflected in measures of changes in environmental conditions over time (e.g., damage, materials wear, altered arrangements, modifications and additions). These data may be observed and/or measured in the specific setting of interest (e.g., classroom) or in some setting theoretically or empirically related to it (e.g., children's home environment).

As the hypothetical research reports above suggest, these "outcomes" can include, but are not limited to, attitudes about school, teachers, other students, or one's self; social behaviors such as cooperation and conflict, aggression, helping, social support, independence, respect for authority, self-control, and personal initiative; standardized test scores on reading or math; analyses of student speech for indications of academic learning or verbal participation in class; and administrative and managerial behaviors including amount of time spent organizing activities as a percentage of total time in class, measurement of number of rules in classroom setting and how they originate and are enforced, number of rules broken and amount of time spent disciplining students who break them, nature of discipline, and so on.

Selection of Outcomes

Selection is a function of values. When multiple outcomes are observed, as is increasingly the case, these have been selected from an enormous pool of potential outcomes. We focus on reading or math scores, as measured by standardized tests, for example, because these abilities are considered essential to minimum acceptable functioning in society. Eliminate the need for these skills (e.g., by equipping and training everyone in the use of electronic calculators), and the interest in math scores as an outcome variable might well disappear. As values change, so does our emphasis on outcome measures. Many parents fought vigorously in the sixties to focus attention on social outcomes: self-esteem, confidence, cooperation, independence. Now the focus is once again on more traditional outcome measures.

At different points in time developmentally, we focus on different kinds of outcome measures. We look for different kinds of performance from a five-year-old in kindergarten than we do from a sixth grader or senior in high school. And one's role in the setting influences selection of outcome variables. A teacher may focus on reading skills for political reasons (financial rewards and career advancement meted out by school administrators who justify their own record by citing student test scores). The comptroller may be more interested in the financial costs of damage and destruction to property done by students. Students may focus on grades, or being "popular", or being outstanding athletes. Again, simply stated: outcomes are socially defined. They change in emphasis, if not kind, over time, and they are often valued differently by persons whose roles or purposes for being in the setting differ.

Predicting Outcomes

A more difficult question than defining "outcome" is determining whether it is possible to identify configurations of environmental and personal resources which support relatively stable outcomes, whether academic, social, or administrative. Assuming one starts with a goal of maximizing a particular outcome, in other words, is it possible to predict a configuration of variables that will result in a significant likelihood that a desired outcome will be achieved?

The nature of the outcomes selected will determine their generality across different situations and participants. As Roger Barker (1968) has demonstrated, certain types of behaviors are nearly invariant within similar settings, despite very different participants over time. It may be easier to predict satisfaction, role behavior, student verbal participation in class, and involvement in extracurricular activity than test scores or self-esteem. As I noted in the hypothetical research report, similar outcomes may also be obtained by different combinations of factors operating together. Excellent reading scores might be attained by an outstanding teacher despite negligible support from parents at home; or, conversely, a high level of commitment and involvement by parents may offset or compensate for a poor teacher in the school environment.

There is the additional problem that identical objective characteristics of the setting may have very different effects depending on how they are interpreted by participants in the setting. Reality is socially constructed: what is, is what I think is. To predict outcomes accurately we need to understand not only what the factors are, but what their meaning is and how they are interpreted. The same constellation of factors may have very different meaning, and thus effects, depending on the history of the situation and the

individuals in it. In a physical planning context, Donald Appleyard has described neighborhood residents' rejection of what designers and planners considered to be genuinely positive improvements to their neighborhoods because they interpreted the changes as undermining their social and economic position in the neighborhood. Unfortunately, most of our predictions of effects are based on relatively objective characteristics of programs and facilities, and not on the meaning attributed to them by their users. This is one reason predictions often fail: we assume their meaning across contexts is constant.

The first order of business, then, is to identify all those variables that may influence behavior in the classroom setting, including influences and factors operating outside of the classroom setting in other parts of the school, in the community, in the home, the state, the nation without trying to specify how all of these individual factors are related to each other in a causal model. Since the possible permutations based on the large number of variables we have identified so far result in a staggering number of "configurations" that might result in similar outcomes, I am not convinced that it is possible to identify general causal relationships, especially in a static sense (AB).

More useful would be to alert teachers and students, as well as experts who might work with them, to the possible impact of a wide range of social, economic, administrative, cultural, and physical factors operating in their setting. And then, for any particular setting, to begin looking at how these factors operate. Given all the factors potentially active in any situation, one also needs to characterize the factors in terms of their resistance to change. If one accepts the compensatory nature of the variables involved (i.e., different combinations will produce the same results), and the

implication this has for emphasizing or strengthening some factors as others change (assuming one values the same outcome), then it becomes imperative to understand which factors are likely to be flexible. Some factors will remain as constraints or demands on the system, thus reducing to a more manageable number the number of factors one can actually begin to consider manipulating in an effort to maintain levels of outcomes.

The framework proposed is essentially more of a management than planning perspective. The former implies a dynamic equilibrium maintained by continuous monitoring and feedback over time, with modifications to the system taking place relatively frequently. Dynamic equilibrium is maintained by compensating for a change in one factor (e.g., the loss of an outstanding math teacher) by strengthening another factor (e.g., increasing student access to highly motivated college student tutors or outstanding educational facilities located in museums [e.g., Exploratorium] that may stimulate student self-interest and motivation).

The planning model, in contrast, is more static. It implies not only identification of the factors involved in any system, but a fairly precise understanding of the causal relationships among them. It implies that once a program or facility is planned, relatively little change will occur in it except at major intervals (often initiated by a clear dysfunction of the system for a long period prior to the change effort).

How does all this relate to the practitioner's, or school administrator's, desire for predictability of outcomes? In this way: I am suggesting that research can identify relevant variables to consider in assessing behavior in any situation, but that research is much less successful, at this point in time and perhaps always, from describing the exact linkages among all variables (because these change and have similar effects in different

combinations) in the form of general predictive models. Predictability is further limited by the absence of detailed ecological descriptions (i.e., encompassing a broad range of social, psychological, political, economic, and environmental characteristics of the setting) of the conditions under which different studies occur. Ecological research must develop ways of describing the setting accurately along many dimensions in order to make relatively valid comparisons across settings. Further, I assume some "conditions" will consistently show up as more important than others, and that some "conditions" may have a great impact on certain "outcomes" and very little on others (e.g., seat location may affect friendship patterns but not student health).

Theoretically, over time and with research conducted with attention to ecological description of study conditions, consistent patterns or configurations of environmental and personal resources tied to particular but limited outcome measures could be identified. These more general predictions form the basis for initial planning of programs and facilities to achieve intended outcomes. But with the clear understanding that because each situation will have unique properties in addition to the properties it holds in common with similar settings, in order to maximize a specific outcome in a particular setting a site-specific ecological analysis would have to be undertaken to identify the role of different factors and to look for factors not emphasized in the general predictive model that may play a compensating role in the specific situation. This, then, is a search not for general ecological principles that can be applied in an invariant way to any setting, but rather a quest for "bounded predictability."

"Bounded Predictability"

Given an understanding of the factors operating within a single context bounded in space and time, such as a classroom or perhaps a school, our

chances of predicting "outcomes" are reasonably good. This kind of "bounded predictability" is possible because most of the variables operating in the situation can be known, particularly over time as continuous mini-inquiries are carried out that serve to clarify the relationships among the different variables.

Mini-inquiries, rather than being viewed as only the most preliminary step to the development of full-blown experimental studies that will eventually lead to precisely developed working models, are the foundation for a continually evolving ecological theory routed in specific time/space contexts. While general ecological principles primarily emphasizing which factors may play a role in a setting can be developed, specific predictions are made not for all classrooms, or schools, but for a classroom, or a school.

A two-tiered predictability emerges. The first is based on the assumption that over time patterns of some outcomes may become discernable in relation to relatively basic configurations of environmental, personal, economic, and political factors. In the planning of new facilities or programs, these kinds of data are used to guide the program's initial development. To maximize outcomes for a particular setting, a more refined ecological analysis occurring continually must be performed, with the goal of achieving a kind of "bounded predictability"; that is, a reasonable prediction of what will happen in a specified context. Practitioners could be trained to do these types of ongoing mini-inquiries and should be involved with them regardless of who has primary responsibility for them.

"Bounded predictability" is characterized, then, by continuous interventions sustained by an experimental attitude. Decisions will be made with the best available information. The more varied the settings to which programs are applied, and general predictions of outcomes made, the more likely

will the predictions fail. To attain desired outcomes, programs and facilities have to be as varied as the users and settings they serve.

Verification of Outcomes

It is beyond the scope of this paper to describe in detail how the tremendous range of outcomes listed earlier could be measured. Each outcome may require a different method or combination of methods. Interviews, ethnographic and systematic observations, analyses of video and tape recordings, questionnaires, use of archival data and school test results are commonly used techniques.

CONSEQUENCES OF ACTIVITY STRUCTURES

Steve Bossert
University of Michigan

The question you pose concerning the consequences of activity structures for teachers and students is almost identical to the one I addressed in my paper for the NIE School Organization and Effects Conference. After some thought, I've not been able to add any specific items to the model (though I'm sure the list is not exhaustive). So, rather than simply review that paper, I'll indicate several of the most important consequences of an activity structures analysis--ones that have shown definite promise in our past and current research projects.

At the most general level, the structural characteristics of the learning environment can be conceived of in terms of the temporal ordering of different forms of activities, especially as these affect the student's exposure to particular curriculum contents, the distribution and use of resources, the pedagogical decisions that teachers make, the meaning and effect of social influence, and the exercise of teacher authority. The temporal properties of activity structures imply an analysis of the use of time: Learning may be influenced by the way in which schools, classrooms and sub-grouping within a classroom specify the length of time students spend in particular sets of activities. You know this area as well as anyone, so I need not repeat the basic aspects here.

Simple analyses of available time or time-on-task, however, are too limited. Differences among activities and their interrelation in an activity structure must be considered. The relationship between time and learning, for

example, probably is not linear. Activities may vary in the time required to master the knowledge and skills associated with them. In part, this may be a property of the activity itself. Some tasks involve a longer sequence of component steps or are more complex than others. To the extent that fixed time periods are allocated to certain subjects--as they are in most elementary classrooms--certain efficacious learning activities either may be prohibited or, when used, may not adequately reinforce the knowledge and skills involved because the instrumental reward value of task completion is withheld. The organization of time at the school level may affect the types of activities used in classroom instruction. In comparing classrooms, especially those in different schools, the time frames in which particular instructional tasks are to be performed affect student learning as well as teacher planning.

Moreover, students may vary in the time it takes them to master an activity. Some children may require more time to complete a task or more repetitions to instill the behavioral content of the activity; others less time. The pacing and sequencing of tasks in an activity structure as well as its flexibility to accommodate different rates of mastery may have important effects on learning. Here, the effect may accrue through the decisions that teachers make concerning pacing and sequencing of instructional tasks. The collective nature of instruction is an important factor. When faced with a group lesson (e.g., recitation) teachers generally seem to use broad indicators of class performance in making their pedagogical decisions, and an individual student's needs are often subordinated to the group. Dahllof's work on recitation and large group activities indicates that teachers pick a criterion steering group, and progress is referenced to the achievement of about 20% of the class. Students who learn faster than this group must wait or receive other assignments, and those who learn more slowly may never have the opportunity to grasp the

material. The collective nature of the classroom task environment forces the teacher to attend to some bits of information and not to others. But, little is known about why certain pupils become part of the criterion steering group or about how variations in instructional method and curriculum content may influence either the composition of the steering group or the nature of what is monitored by the teacher. For example, I suspect that the individualization of instruction may not generate a steering group in the way recitation does. Although I can't provide any hypotheses on the specific effects you might find, the collective character of instruction (or its degree of differentiation along with the extent of pupil choice) should influence the criteria teachers use to make their pacing and sequencing decisions; this, in turn, affects students' learning. If your mini-studies could examine how the activity structure affects teacher's perceptions of students, it would be a tremendous breakthrough.

A related matter has to do with the effect of activity structures on teacher assessments. In making classroom decisions, a teacher may rely on a variety of cues to assess pupils' learning. The availability of these cues and the meanings they acquire may derive from the teachers' own relationship to classroom activities. For example, attribution theorists have indicated that actors and observers construct different accounts of behavior: Actors tend to attribute events to situational exigencies, while observers attribute the causes of behavior to personality traits of the actors. The collective nature of an instructional activity, particularly the extent to which the teacher is involved with pupils in the activity, may affect such evaluations. Again, I have no specific hypotheses because there has been no research on this topic, but you might be able to answer the following questions: Will a teacher who is actually engaged in the task make different attributions of intent and

motivation than a teacher who is merely a supervisor or observer of the action? Does involvement lead to the use of different cues for assessing pupils' behavior? Differences in attributions may affect the student: Whether behavior is thought to result from low motivation or from the ambiguity and complexity of the lesson affects classroom decisions. To the extent that these decisions have a pedagogical influence on students, achievement will be affected.

Many classroom decisons involve other types of assessments of pupils' performances on instructional tasks. Whether a child is achieving or not and how his performance compares to others constitute important information. There are at least two ways that the activity structure may affect these evaluations. First, the degree to which conduct is linked to evaluations of achievement may depend on the activity form. During recitation, for example, displaying proper answering conduct is as important as having the correct answer because the success of the activity, by definition, depends on pupils waiting their turn to answer the teacher's questions. Where coordinated conduct is not so important for the completion of the activity, performance assessments may not involve conduct. Second, performance appraisals also may depend on the nature of instructional activities. Comparative assessments are possible only when pupils are engaged in the same task or when various tasks are standardized to a common performance norm. When teachers employ a diversity of instructional tasks or when pupils are engaged in individualized lessons, information for comparative assessment may be unavailable. How does the multiplicity of instructional tasks affect the teacher's performance attributions? For example, do teachers shift from comparative to individually-referenced standards as the activity structure becomes more diversified? How does this affect decisions about pacing and sequencing of instructional activities? What constitutes performance information for the teacher may depend on the character of instructional

activities. I feel that the collective nature of instruction has a considerable effect on what teachers look for in students. Your mini-studies could begin to explore this by looking at how decisions related to pacing and sequencing are linked to the activity structure.

The collective nature of activities also may affect the distribution of instructional assistance. In groups where members have different aptitudes (which is likely even in small within-classroom ability groupings), engaging in common tasks necessarily implies that some individuals will either finish or demonstrate competence sooner than others. Aside from issues concerning the continued motivation of those who must wait for others to complete the work, the teacher faces a managerial task of what to do with these students. Keeping top performers in the lesson, particularly if it is a recitation or discussion, may facilitate the teacher's work, for these students contribute to the activity and serve as standards for the rest of the group. On the other hand, bored students may disrupt the activity or, at least, decrease the teacher's ability to maximize the time spent with the poorer performers.

I've found that teachers who used common, collective instructional activities sometimes use top performers as standards or facilitators for the group activity. Other times, the teachers provided these students with extra assignments--usually to read ahead and begin the next lesson--so that the smaller group of students would receive more of the teacher's attention. In actual practice, however, the top performers received more individualized assistance than other students. Between the time spent explaining the extra assignment, helping the students begin it, and answering questions during the work, the teacher allocated more than the average amount of assistance to the top performers. The fact that these students had instruction paced at a higher rate and received more help with their work seemed to bolster their achievement

advantage in the class. Moreover, the teacher benefited from this because it guaranteed that these top students would continue to facilitiate group activities by their good performance. By contrast, teachers who used collective activities infrequently provided the most assistance to pupils having difficulty with the lessons. Certain top pupils could not become standards for the class, since many different activities were taking place at the same time. Those students who were doing well were expected to continue at their activity, leaving the teachers free to spend more time with the students who had problems. Your mini-studies might examine the basis for allocating instructional assistance and its consequences for students.

Another related matter is the activity structure's effect on teacher authority and teacher-pupil interaction. To briefly summarize my School Review paper: Teachers who relied on recitation were less able to establish close social ties with their students than were teachers who primarily utilized small group and individualized projects. Recitation places teachers at the center of control: It forces them to rely on equitable, impersonal sanctions (usually short verbal desists) and on the authority of office rather than on personalized influence mechanisms. By contrast, small group and individualized instruction increases opportunities for teachers to covertly "bend" classroom rules to handle individual problems and facilitates teacher involvement in, rather than simply teacher direction of, the activity. This created a considerably stronger sense of rapport between teacher and students than that which occurred in the recitation organized classes. The children in the study explicitly expressed the importance of personalized treatment and teacher participation for close social bonds. It was not that the teachers who used recitation were less concerned or less empathic, but rather that recitation precludes the individualization and involvement allowed by other activities. (Although

I did not test the relationship between activity structure, teacher rapport and control, and achievement, Bidwell and Spady have hypothesized that the degree of trust and rapport in the teacher-pupil relationship affects student's achievements.) The mini-studies might attempt to replicate Rothenberg's and my own findings on desist rates and authority.

In looking at the effects of activity structures on peer interaction, the collective character of instruction and the nature of evaulation and rewarding are very important. Collective tasks provide a basis for differentiation within a group. When individuals engage in the same activity, interpersonal and self-assessments can be readily referenced to common standards of performance. Comparisons and social sanctions that may derive from these judgments are generally seen as equitable because they apply equally to each member of the group. Formal testing is perhaps the most fundamental for it usually links performance to a reinforcer that has clear comparative meaning. Grades and test scores become a common criterion by which students are judged. Yet, it is still unclear how teachers use test results and how important these are for students' self- and interpersonal evaluations.

Activity structures may vary in the extent to which task performance affects interpersonal assessments and differentiation within a group. When students are not engaged in common tasks, any comparative evaluations must be made on criteria other than relative achievement. I've found that the ways students evaluated one another and chose friends were linked to the activity structures of their classrooms. Where group recitation and other common assignments were the most frequent instructional activities, relative academic performance played an important role in the children's assessments of themselves and their peers. Performance was stated as the criterion for friendship, and friendship cliques generally contained only children achieving at similar

levels. By contrast, in classrooms which had few common group activities and relied largely on individualized and student-initiated small group projects (multi-task organized classes), interpersonal assessments rarely were based on task performance and the children did not select friends according to their relative academic standing in the class. Common, collective activities, particularly when clearly linked to a formal reward system that is based on comparative judgments of performance, foster the development of a competitive status system within a classroom, where status and interpersonal bonding depend on individual performance. This decreases overall group cohesion and reinforces social relations that support pupils' productivity and the chances for obtaining rewards. When a classroom's instructional organization involves a variety of different activities occurring simultaneously, there is little basis for comparative assessments of task performance. Pupils are free to establish social relationships without regard for their instrumental reward value in obtaining performance recognition.

A classroom's activity structure may have important effects on how children learn norms of cooperation and competition. Students in the multi-task organized classrooms were very cooperative. They worked well in any subgroup of the class, even if normal friendship associations were broken by group assignments. The other children, by contrast, did not want to split up their performance homogeneous cliques and often persuaded their teacher not to do so. There was a high within-group solidarity but considerable between-group competition expressed in play activities as well as in academic tasks. The patterns of social relations among children exemplified different norms of competition and cooperation. While it seems unlikely that generalized norms for interaction would result from one year of participation in a particular activity structure and be visible during the mini-studies, differences in children's assessments

of peers and their social ties may be apparent.

Norm learning in children may derive from patterns of interaction that arise from certain structures of activities. Dreeben, for example, has noted that self-sufficiency is reinforced in activities that involve individual rather than group work. Learning to work alone necessitates breaking patterns of dependency which can develop from cooperative tasks. Any division of labor within an activity precludes reward structures that are clearly based on individual performance, thus limiting social reinforcement for independent work. Autonomous and self-directed behavior, however, may require more than simply learning to work by oneself. My own studies suggest that self-directed work behavior among pupils is associated with activity experiences in which teacher control and direction is minimal. Students in classrooms that relied heavily on group recitation and seatwork--tasks which entail high levels of teacher control--showed little self-directed behavior when confronted with new, fairly undefined activity settings. Although they learn to work alone, these students were dependent on their teachers for instructions concerning proper work procedures. Classes that employed numerous individual and small group projects in which children were encouraged to choose and organize their own tasks seemed to encourage children to begin new activities on their own without waiting for detailed instructions (sometimes to the dismay of their teachers). Mini-studies might investigate how students approach different activity forms and how their regular classroom experiences affect their work orientations.

I hope these examples are enough to help launch the mini-studies. The most interesting area for me is the activity structure effects on teacher decision-making and perceptions of students. Almost no data exist on this topic, and the mini-studies could provide a breakthrough.

IN SEARCH OF WHAT "OUTCOMES" MEAN FOR ECOTHEORY

Carolyn Evertson
R&D Center for Teacher Education
University of Texas, Austin

The issue of 'outcomes...what they mean and what they don't mean to the construction of an ecological theory...surfaced at several points during the discussions at the Seminar of Scholars' meeting in November. Since I have worked with both the process-product paradigm and with some of the more descriptive work also, I believe a historical perspective regarding the role outcomes have played in classroom research thus far might be helpful. Let me review some of this history and speculate on what these might look like from an ecological perspective.

One of the reasons that the process-product model (collecting process data across the length of the school year and relating them to end-of-year achievement test scores) became a prevailing paradigm in the first place was that research on teaching prior to the 1970's had produced weak and contradictory results. The Coleman report and similar studies had raised serious questions about whether teachers made <u>any</u> difference in student learning at all, and reviews by Rosenshine (1971) and others pointed out that few teacher behavior variables received consistent support as correlates of student learning, and none of these correlated strongly and without exception. The emphasis on long-term outcomes, especially standardized achievement tests at the end of an entire school year, allowed investigators to argue the general point that teachers do in fact make a difference (as well as the more specific points involved in ascribing this difference to specific behaviors).

As research on teaching continued into the 70's issues have proliferated and the field is recognizably more complex as it becomes more sophisticated. Even so, results show clearly that some teachers consistently produce greater student learning than others, and that certain teacher behaviors have consistent positive or negative relationships with learning outcomes.

The specific instructional methods that are appropriate vary both with grade level and other context variables, as we have seen, but it is clear that learning outcomes are closely related to variables like the amount of time that students spend engaged in academic tasks and the amount of active teaching (sometimes called "direct instruction") that they receive. With hindsight this seems obvious but such data were necessary to refute the assertions, commonplace in recent years, that individual differences in teachers and/or in teacher behavior do not significantly affect student outcomes.

Consequently, the need to include long-term outcomes is reduced. Furthermore, as attention shifts from gross general differences in teacher behavior to differences in the specifics of implementation of similar general patterns, long-term outcomes become less appropriate. There is less reason to believe that differences in subtle and situation-specific teacher behavior directly influence long-term outcomes.

The issue of appropriate criteria or "outcomes" becomes central in the design of smaller studies. Kounin used measures of student attention as criteria in his study of management techniques. While the effectiveness question is still alive and has implications for policymaking and for teacher education, effort should be made to search for other short-term outcomes which have validity, urgency, and practical appeal in the classroom. In this respect the development of an eco-theory comes at a choice point in

the conduct of classroom research, where there are new places to look and researchers are increasingly more willing to look at alternative explanatory models of the process of schooling.

Let us examine what some of these shorter term outcomes might look like. If we assume that teaching behaviors are purposive, then these behaviors may be looked upon as treatments. These treatments ultimately result in effects, both short- and long-term. Effects then can be looked at as outcomes or consequences. Following this line of reasoning, then, suppose that a teacher's purpose is to improve (change) participation patterns of the isolated student.

Each move initiated by the teacher to help the student increase involvement and subsequent moves by the student can be considered reactions or chains of actions or consequences. (Barker's work in arguing for an ecological psychology, as well as the work of Gump and Kounin building upon Barker's notions, suggest that such "chains of behavior" are necessary in order to understand meaning or context.) The student's move can also be viewed as stimulators of teacher's reactions but for purposes of this example, let us look only from teacher to student. Each move is similar to "behavioral shaping" in the Skinnerian sense. By the same token the link between stimulus and response can be as closely tied as question-answer, smile-return smile, teacher signalling the place in the text, child finding his place, etc. One problem for investigators working from an ecological perspective will be to determine the appropriate inferential gap and/or to establish that the meaning of a given interaction is the same to each participant. The advantage of the running description in this case is that connections can be examined which give us insights about the incremental steps which bring about changes (or prevent those changes from occurring).

Another example of the use of nontraditional outcomes is illustrated in a study by Weinstein (1977) which examines the relationships among the elements in a designed environment and students' use of various centers in the classroom. After the observer collected baseline information on the spatial distribution of activity in the elementary school open classroom, she and the teacher rearranged the various centers and work areas with specific behavioral goals in mind. Follow-up observations were conducted using a time-sampling-by-child instrument and significant changes in activity patterns in the desired direction were found. These changes were consistent with the teacher's goals for her students.

Another example comes from Far West Laboratory's IR&DT team in San Diego. This group worked together as a unit (teacher, teacher-trainer, and researcher) to come at the problem of outcomes quite practically. The team, after deciding upon a research question, developed their own outcomes based on what they needed or wanted to know. The research questions were: What were the most common distractions in their classrooms? How were they coped with? And what results did the coping techniques have regarding (1) how long the technique took, (2) effects on momentum of the activities, and (3) ultimate elimination of the distraction? This information was collected and teachers worked with their own results. The important issue here is not so much that teachers framed questions and participated in the data collection and ultimate answering of their questions (no small feat), but that the intricacies of context were also understood. For example, some teachers realized that the elimination of distractions and use of certain coping techniques which stopped the distractions the quickest were not always the most desirable ways to deal with potentially disruptive situations. In one case, a teacher might elect to use a coping

technique which took longer, but had better potential for instructing students in social skills.

Our own work on classroom management and organization at the beginning of school in elementary third grades was sparked by concerns voiced to us by teacners and practitioners. Teachers we worked with had articulated the need for careful planning, organization, and management at the start of school in order to "get off on the right foot." They and several instructional coordinators and supervisors in the school district presented us with a series of questions which they felt were critical to teachers and on which we needed more information. From these questions we designed our points of inquiry. We entered classrooms on the first day of school prior to the opening bell and recorded detailed descriptive narrative information addressing 50 or 60 prespecified questions surrounding the issues of time use, coping with distractions, constraints, interruptions, and transitions, setting up and socializing students to rules and procedures, introduction of content, room use, etc., as well as recording levels of student engagement. In part we were searching for new variables and new ideas about how classrooms worked and, by selecting the descriptive approach, we were able to see phenomena and teacher-student interactions, and student-student interactions, which our previous system of coding categories did not reveal. In this setting the outcomes for teachers were simply understanding and gaining information on how organizational strategies are set up at the beginning of the year and how this contributed to the maintenance of a classroom environment conducive to student growth as the year progressed. Secondarily, and only secondarily, were we concerned with student achievement in those classrooms. Our initial concerns and those of the teachers were the organizational strategies and dimensions which might

be revealed. Of course, another important student outcome is understanding what it takes to operate and negotiate settings in a risk-free manner such that the student maximizes chances for success. As a side note, well managed classes did tend also to have higher relative achievement, but this relationship was explored only because those data were also available to us as simply another outcome. As I understand the process being used by the Far West Laboratory EcoTheory project in conducting their "mini-inquiries," it is similar to how I believe such outcomes can be identified, understood and acted upon.

My own experience in looking for classrooms have led me to work with a number of approaches. These first experiences with helping Good and Brophy develop their coding system which provided for recording individual student behavior (a breakthrough for its time, 1969) to building more and more complex coding schemes, analyzing data from large-scaled correlational and experimental work, and presently to more detailed descriptive work utilizing teachers in the planning and the research somewhat parallels what I see happening in the field today. Brophy, writing for the Journal of Educational Psychology (forthcoming), has suggested that the time has passed when we gain maximum yield from large field studies based on the process-product model. He suggests that smaller, more refined studies focusing on aspects of schooling deemed to be important in their own right will add the needed linkages and understandings to the broader strokes used in the large studies. I might add that the payoff in the smaller studies will be greater when conducted as I have suggested earlier--by the researcher and teacher inquiring together to identify, understand, and act upon outcomes, since they initially are relevant to the immediate context of that specific classroom.

I have tried to summarize ways in which outcomes have been conceptualized in a few studies. This certainly does not exhaust the possibilities. Perhaps now, as never before, we have the opportunities to think creatively about these issues and to utilize the perspectives of participants in the business of schooling to help us.

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HOW TO MAKE USE OF THE ECOLOGICAL THEORY OF TEACHING: SOME CONSIDERATIONS FOR TEACHER USE AND FOR THE PREPARATION OF TEACHERS

Donald Blakeslee
Carbon County School District One
Rawlins, Wyoming

If an ecological theory of teaching is to be useful, it must appeal to and be able to be used by practicing classroom teachers. Attendant to this possibility are two issues. First, how might a teacher use such a theory if he or she were knowledgeable about it? Second, what kinds of preparation experiences should teachers have that will enable them to practice elements of the theory?

The teacher "armed with the ecological theory" would grasp the wholeness, the gestalt, if you will, of life. This "wholeness" would permeate the teacher's thinking and approaches to his/her "teaching". Learning in a formalized setting would be seen as only a part of the total human learning experience. For example, the acquisition of reading skills would be seen as a means not an end. Penmanship skills would be seen in the same way, and grammar and composition would be seen as a means to expression. All of the learning would be viewed as a part of the process of either being or becoming.

The student would be seen as a whole by the teacher--as an active organism existing in an environment containing other "wholes" as parts of a large whole, or as whole parts interacting with other parts to create existence. The teacher would be skilled and comfortable in being a part of that wholeness or totality that a classroom is.

Another approach to attempt to answer the question might be in looking at existing teacher preparation programs. As far as this observer can see, most

teacher preparation programs do not include preparation in such basics as "getting along with people". Such a basic could certainly be drawn from understanding individual human behavior as well as what we now find in the knowledge of group behavior. There are few, if any, teacher preparation programs which look to new understandings in group dynamics for preparation of teachers. Where might one find a course in group or organizational communications? A quick glance at some university catalogs finds such courses in commerce and industry, but not in education. The same may indeed be true of courses which offer learning regarding the importance of space to behavior. A review of teacher preparation programs finds attention to individual differences but little pertaining to collective human behavior or individual behavior in groups. Nonverbal communication, a relatively recent area of investigation and learning, is probably at best only a passing topic of discussion in the preparation of teachers.

This writer's experience has taken him into the area of teacher dismissals. Although no knowledge is held by this writer of any studies done from this perspective, experience would indicate that stated reasons for most dismissals do not include a "lack of knowledge of subject matter", a phrase often used to deal with humans in "legalize", but include rather those charges which have to do with human interaction, e.g., communication problems, lack of cooperation and differences in philosophy. It would appear from many of the cases that there exists little preparation on the part of educators in resolving conflicts arising from human interaction. Consequently, it would seem that the ecologically-armed teacher might be prepared to understand human conflict and be skilled in conflict-resolution procedures. To put it another way, the ecologically-armed teacher might be trained to put the oil on the parts to make the whole run smoothly.

Certainly, the ecologically-armed teacher should know that his/her operation as part of a whole is just as vital as all the other parts and, consequently, such a teacher should be skilled in self-examination and capable of adjustment. Sensitivity to self as well as others certainly has to be a part of this teacher. This includes an appreciation of self-preceptions as well as an awareness of perceptions of teacher role as held by the other parts of the whole.

It would seem from what has been said thus far that what is proposed is that the ecologically-armed teacher would be equipped with a thorough knowledge of social systems (which classrooms are). This is in accordance with statements made elsewhere in this theory development effort. However, none of the above should be construed to mean that there are not elements from the traditional preparation of teachers that should be retained. The preparation required at least to some extent at present in terms of child development and adolescent behavior should be retained but, perhaps, cast in a different perspective, the perspective of group behavior or human interaction.

It occurs to this writer that none of his preparation as an evaluator of teachers has ever been from the perspective of group interaction or from the perspective of the classroom as a social system.

The writer whose background includes some work in group counseling and sociology has been aware for some time that those areas have much to offer teacher preparation and, indeed, he has observed some successful teachers employing some skills learned from those areas. It is from such experience that the writer sees some viability to the whole matter of the development of an ecological theory of teaching.

AN ECOLOGICAL TEACHER:
A PRACTICAL VIEW

Ann Lieberman
Teachers College
Columbia University

In my original response to the Seminar, I tried to think about an ecological view of the classroom from a teacher's perspective. My view was that "our eventual goal is to understand classroom life as it occurs dynamically over time, viewing it from a set of multiple perspectives."

I backed up a little and now feel that we must describe what teaching is like now, what the classroom appears to be to the conscious teacher and then what might be a large, more comprehensive, multi-faceted view of how to be effective in a classroom and intervene with concepts that allow for self-improvement. My view will be from the "bottom up", i.e, from the teacher's view of his/her role.

Teaching Now

Teachers work in a room with from 25-35 students, from 4-6 hours a day, and for ten months of the year. Most are responsible for teaching from 5-10 different subjects, sometimes with help from aides or specialists. Several understandings have been described that get at the complexity of life in classrooms.[9]

9. See for example:
Waller, Willard. The Sociology of Teaching. (New York: John Wiley & Sons, 1952, Second Edition)
Lortie, Dan. School Teacher. (Chicago: University of Chicago Press, 1975)
Jackson, Philip. Life in Classrooms. (New York: Holt, Rhinehart & Winston, 1968)
Lieberman, Ann & Lynne Miller, "The Social Realities of Teaching" in Staff Development: New Demands, New Realities, New Perspectives (Eds) Lieberman, A. and L. Miller (New York: Teachers College Press, 1979.)

The Teacher's Central Dilemma

Waller's major insight about teachers is as true today as it was when he first wrote about it in 1932. Teachers somehow have to do something to the students, that is teach them, but they need to do this while providing friendship too (or affect in today's terminology). This dilemma forms the basis of the relationship between teacher and student. How this gets accomplished is part art, part craft, part science. And this essential dilemma involves the teacher in a struggle to manage a large group of students who are different on many dimensions, a large number of subjects and a dailiness that doesn't go away.

Rewards From Students

Since the teacher's primary rewards come from students, one cannot overestimate the significance of this primary concern. Along with the major task of the teacher, one must also incorporate the "endemic uncertainties"[10] of the link between teaching and learning. Much planning is done with the hopes that students will learn, but there are few guarantees that it will happen.

Goals and Objectives

Goals and objectives from teacher's guides and manuals are attached to materials, not to a teacher's management concerns. Therefore, another significant part of the teacher's role is to organize how the materials get used, to deal with a variety of combinations, to figure out how long to stay on a given idea, when to move, how much to review and under what set of conditions.

Several ethnographies of classroom life illustrate the teacher's assault on keeping activities moving, controlling what goes on and gaining and keeping a sense of direction.[11] The dynamics of these realities have yet to be

10. Lortie, Dan. School Teacher. (Chicago: University of Chicago Press, 1975.)
11. See for example:
Smith, Louis and Wm. Geoffrey. Complexities of an Urban Classroom. (New

explicated in such a way that the teacher can reflect on them and at the same time intervene to change some of them if that was so desired.

School Environment

Lest we blind ourselves to looking only at the teacher in his/her classroom, let us not forget that the social environment of the school also has powerful effects on what goes on "behind the classroom door."[12] And these effects need to be part of our understanding of an ecological view of teaching.

Schools differ on a variety of dimensions that are hard to measure, but easy to describe. For example, we know that states differ in their orientation and expectations for education. The history and experiences of different parts of the country are reflected in their various institutions. Different values are held for schooling by different groups of people. Leadership, support, working conditions--all of these factors affect the work life of the teacher. Physical, social, and political dimensions surround and touch the local school in various ways. How to these factors get incorporated in an ecological theory of teaching?

An Ecological View of Teaching

My aspirations for an ecological theory of teaching are rooted in the teacher's view of the practical aspects of that work. They also are tempered by the fact that there is a lot we know, but it isn't in a form that is directly useful to teachers. Questions such as the following come to mind:

York: Holt, Rinehart & Winston, 1968.)
McPherson, Gertrude. Small Town Teacher. (Cambrige: Harvard University Press, 1972)

12. See for example:
Sarason, Seymour The Culture of the School and the Problem of Change, (Boston: Allyn & Bacon, 1971)
Liberman, Ann "Effects of Principal Leadership on the Teacher Morale, Professionalism and Style in the Classroom" (Doctoral Dissertation, University of California, Los Angeles, 1969.)

- How can this view help me think in a broader way about what I am doing?
- How can this view capture the essences of what actually goes on in a classroom, not what academic theorists want to happen?
- Can the tension between the teacher's social reality and a more integrated, dynamic, interdisciplinary view of the world be connected?

Can we use words like rhythms, activities, interactions, feelings, development, values, insights, conflicts, movement, dilemmas, tensions, choices, "loose couplings"[13] rather than effects, outcomes, variables, goals and objectives? One group suggests a dynamism and a flow and, if you will, a lot of small streets and detours, while the other suggests never veering off the highway and never finding out anything about the city except what it looks like on Main Street.

A teacher armed with an ecological view of a classroom would have the benefit of ideas, metaphors and descriptions not of simple connections between two variables but of the rhythms of the week, the month or the year, the amount and kind of participation, the dilemmas of teacher involvement with a small group versus an individual or large group, the loose coupling of last year's class versus the tight coupling of this year's class and why, the range of and involvement in activities--in short, we will be moving closer to the teacher's intuitive feelings and understandings of what is going on in the classroom as well as an outsider's conceptualization of those intuitions.

We have a long way to go, but the sensitivity to a more wholistic view of teaching and involvement with people still in the day-to-day struggle can bring us closer to better description and eventually to improvement of both the researchers' work and the work of teaching.

13. Wieck, Karl. "Educational Organizations as Loosely Coupled Systems," in Administrative Science Quarterly, March, 1976 Volume 21. This article suggests a fresh way of looking at organizations that provides an image that approaches an "ecological view" by attempting a metaphorical look that is more in keeping with the actual messiness of organizational living.